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United States Air Force

Asbestos Landfill

Loring Air Force Base

FINAL CONSTRUCTION REPORT

DRAFT

November 1999

010330

Loring Air Force Base

ASBESTOS LANDFILL

FINAL CONSTRUCTION REPORT

DRAFT

Prepared for:
Department of the Air Force
Air Force Center for Environmental Excellence (AFCEE)
Brooks Air Force Base, Texas 78235-5328

Prepared by:
Bechtel Environmental, Inc.
151 Lafayette Drive
Oak Ridge, Tennessee 37830

Contract No. F41624-94-D-8072
Job No. 22784

November 1999
Revision A

Prepared		11/23/99
Approved	Bechtel Project Engineer	11/23/99 Date
Approved	Bechtel Project Manager	11/23/99 Date

Loring\L-2393

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ACRONYMS AND INITIALISMS

ACM	asbestos containing material
AFB	Air Force Base
AFBCA	Air Force Base Conversion Agency
AFCEE	Air Force Center for Environmental Excellence
BEI	Bechtel Environmental, Inc.
MDEP	Maine Department of Environmental Protection
QA	quality assurance
QC	quality control
RFI	Request for Information
USAF	United States Air Force
UTS	Underground Transformer Site

UNITS OF MEASURE

ft	feet
in.	inch
yd^3	cubic yard

1.0 INTRODUCTION

The Air Force Center for Environmental Excellence (AFCEE) has retained Bechtel Environmental, Inc. (BEI), under Prime Contract No. F41624-94-8072, as the full-service removal/remedial action contractor for Loring Air Force Base (AFB) in Limestone, Maine. Final placement of asbestos-containing materials (ACM) into the asbestos landfill and closure of the asbestos landfill was completed during the 1999 construction season by BEI and its subcontractors. This report describes activities associated with closure of the asbestos landfill.

1.1 SITE DESCRIPTION AND BACKGROUND

The former Loring AFB occupies about 9,000 acres in Aroostook County. The closest town is Limestone, Maine, located 2 miles east of the base. On September 30, 1994, it was officially closed and is now the responsibility of the Air Force Base Conversion Agency (AFBCA) and the Loring Development Authority. Figure 1-1 is a base location map. Figure 1-2 shows the location of the asbestos landfill.

The asbestos landfill facility covers approximately 3.5 acres of which approximately 1.75 acres was used for disposal of ACM. The asbestos landfill is located within a gated compound of approximately 100 acres, comprised of two debris landfills and two solid waste/contaminated soils landfills (see Figure 1-2). The asbestos landfill lies in the northwest end of the compound in an area previously used as a borrow area and is surrounded by an earth embankment.

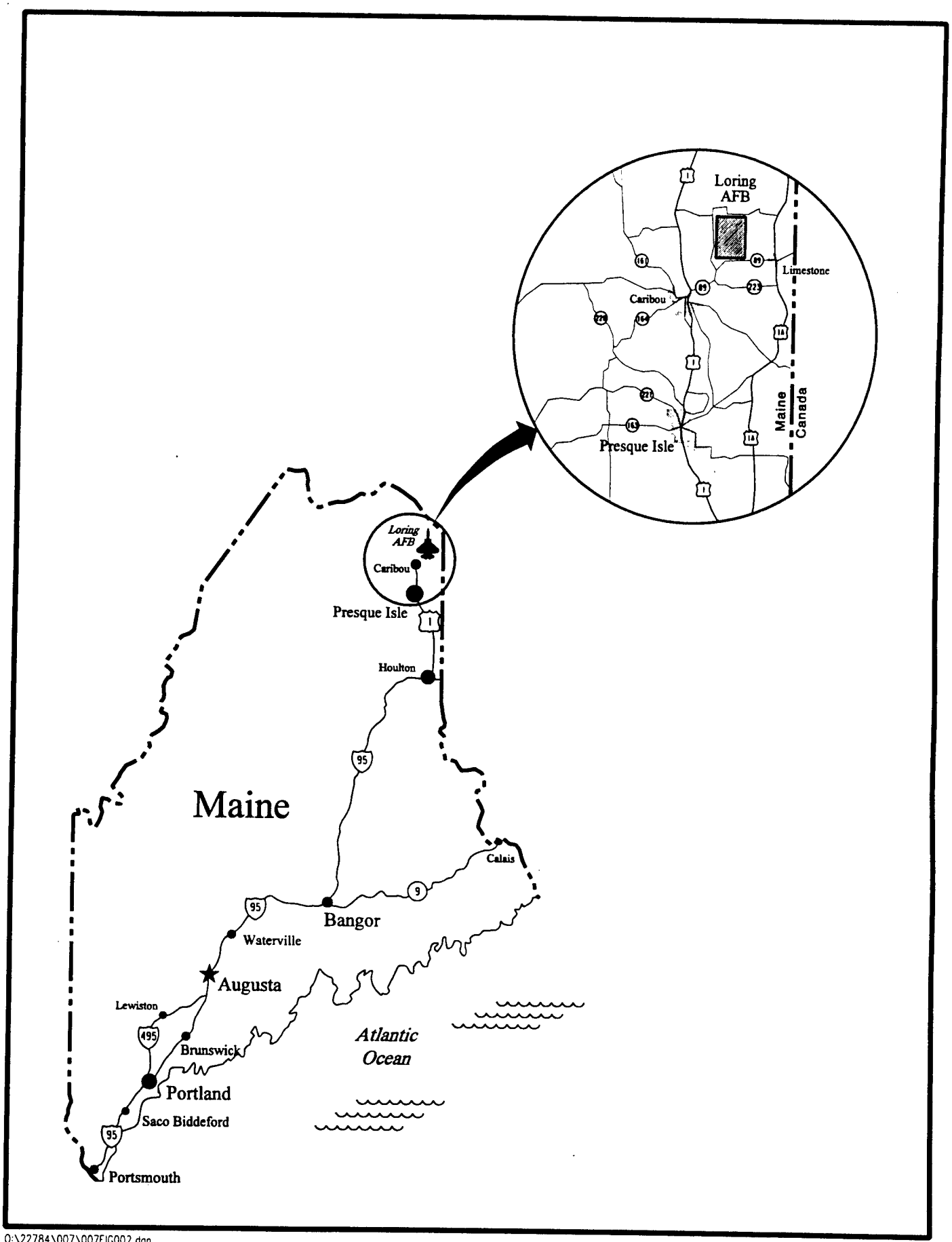
The United States Air Force (USAF) originally received approval from Maine Department of Environmental Protection (MDEP) to establish and operate an asbestos landfill at Loring AFB on March 25, 1983. Subsequent license and permit extensions were obtained and ACM placement continued until September 1999. In July 1999, the final "Loring Air Force Base Asbestos Landfill Closure Application", was prepared by BEI for AFCEE.

Pre-construction activities such as placement and covering of ACM from on-base asbestos abatement operations, investigative trenching for confirming extent of asbestos waste boundaries, civil surveying support, installation of groundwater monitoring wells, soil and groundwater sampling and testing were implemented prior to closure of the asbestos landfill. Asbestos landfill closure activities, which commenced in September 1999 and were completed in November 1999, included subgrade preparation, barrier soil placement, topsoil placement, re-sloping adjacent vicinity areas, seeding and mulching, and production of as-built and topographic survey.

1.2 SCOPE

The scope of cap construction activities included in this report can be summarized as follows:

- Mobilization and site preparation
- Civil surveying to delineate and stake out the horizontal extent of asbestos containing materials and to provide horizontal and vertical control prior to and during cap construction.



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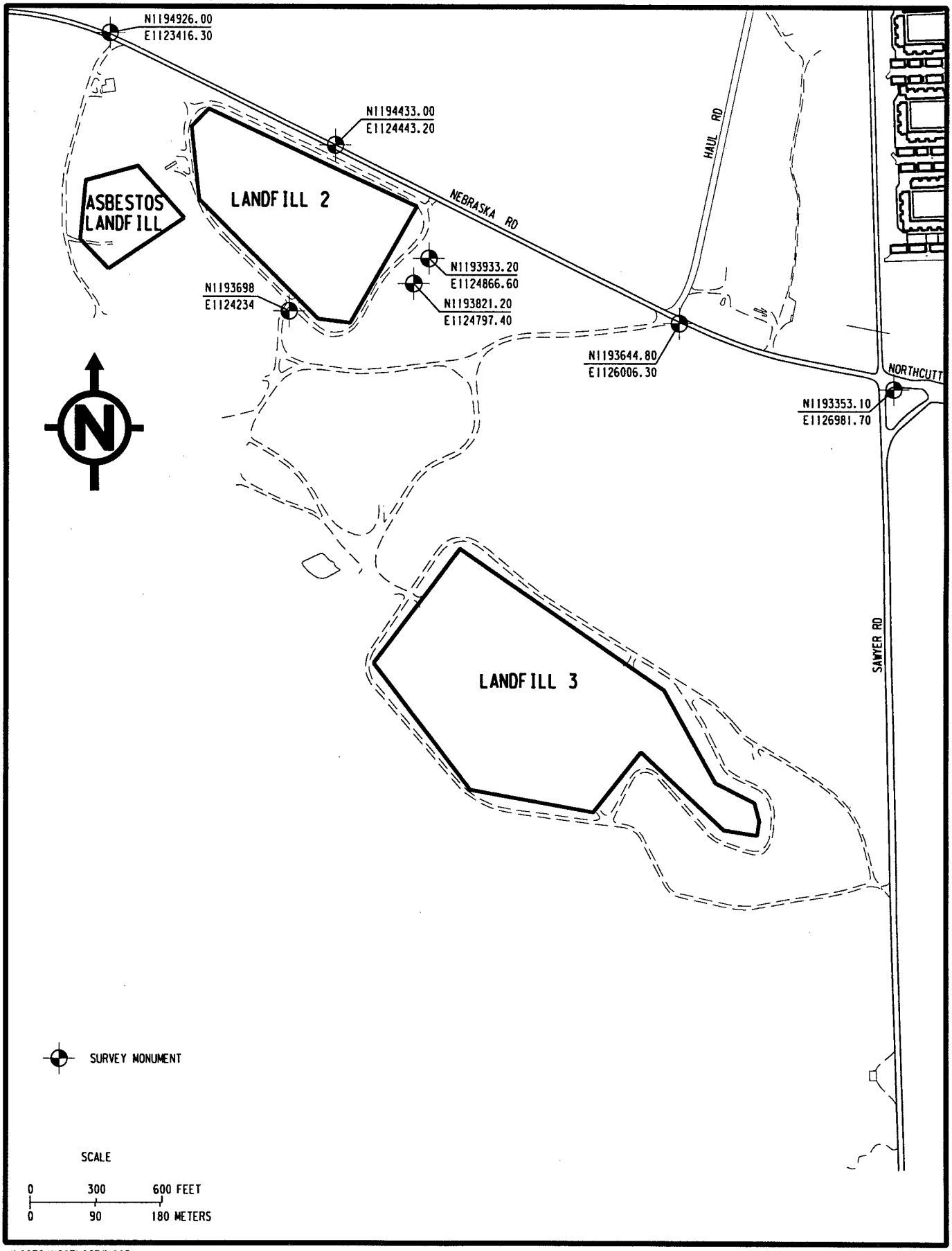
14 JAN 1999

Figure 1-1
Loring Air Force Base
Location Map



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05 FEB 1999

Figure 1-2
Landfill 2, 3, and Asbestos Landfill
Location Map

- Preparation of subgrade, including placement of common borrow to bring the subgrade to design elevations.
- Placement of common borrow as needed to further shape the subgrade for sloping and drainage purposes.
- Sampling of soil from borrow sources.
- Placement and compaction of barrier soil in accordance with the design drawings.
- Performing density and lift thickness tests in each lift of the placed barrier soil.
- Excavating and performing visual lift interface tests between the two lifts of placed barrier soil.
- Placement of topsoil.
- Construction of drainage swale and placement of erosion control matting.
- Seeding and mulching.
- Performing as-built boundary and topographic surveys.
- Inspection of construction activities.
- Placement of asbestos warning signs.
- Performing general site restoration activities including re-sloping of adjacent side slopes.

Most activities were accomplished through the use of heavy earth-moving equipment, including dump trucks for soil transport; bulldozers, front end loaders, excavators, backhoes, and compactors for earth work (including excavation, backfill, and shaping operations); and heavy duty mulch blower for seeding and mulching.

1.3 OBJECTIVES

The objectives of this closure report are as follows:

- Documenting the cap construction activities performed at the asbestos landfill
- Providing verification that performance and quality standards were met.
- Providing documentation to the MDEP and AFCEE that work activities were performed in accordance with applicable work-controlling documents.

1.4 REGULATORY SETTING

MDEP defines asbestos as a group of naturally occurring minerals that separate into fibers of high tensile strength and are resistant to heat, wear, and chemicals. Asbestos waste means any waste that contains asbestos. This term includes, but is not limited to, ACM from abatement projects, ACM from control devices, and friable and non-friable asbestos waste. The handling,

control, transport, disposal, and storage of asbestos is governed by State and Federal Regulations. Chapter 401.5 of the MDEP regulations addresses landfill closure requirements.

On March 25, 1983, the USAF received approval from MDEP to establish and operate an asbestos landfill at Loring AFB for a term of five years. On May 10, 1989, the USAF requested and received a 5-year extension to the original landfill operation license. On July 8, 1993, the USAF requested that the license be extended until the closure of the Loring AFB in October 1994. On October 27, 1993, MDEP granted the USAF an extension to operate the asbestos landfill until November 10, 1994.

In September of 1994, Loring AFB ceased operations as an active military base and AFBCA began overseeing the conversion of the military base into a civilian industrial/commercial complex. On November 2, 1994 AFBCA requested an additional 5-year extension to the existing asbestos landfill license to allow for disposal operations during the Loring AFB conversion period. The extension request was denied.

In May 1996 AFBCA again requested that the previous asbestos landfill license be renewed and extended. MDEP presented AFBCA with two options: apply for a new license or enter into a Schedule of Compliance with MDEP. AFBCA opted for the second choice and on September 30, 1998 MDEP issued an order providing for continued operation of the asbestos landfill, under the terms and conditions of the previously expired license until September 30,1999. After this period, the AFBCA was required to commence with the closure of the asbestos landfill in accordance with the Schedule of Compliance and the new MDEP Solid Waste Management Rules.

Placement of ACMs into the asbestos landfill resumed in October 1998 with the disposal of ACM waste generated from abatement of buildings and the removal of aboveground heatlines at Loring AFB. In February 1999, the USAF submitted a draft closure plan for the asbestos landfill and in July 1999 the "Final Loring Air Force Base Asbestos Landfill Closure Application" was submitted.

Placement of ACMs continued until September 1999 and closure activities began immediately thereafter. Landfill closure was completed in November 1999.

1.5 WORK CONTROLLING DOCUMENTS

Work was performed in accordance with "Loring Air Force Base Asbestos Landfill Closure Application", BEI, July 1999.

1.6 SUBCONTRACTS

The construction activities described in this report were performed under BEI's full service remedial action subcontract.

BEI was under the authority of the onsite AFCEE field engineer, who coordinated activities with AFBCA and with project representatives from EPA and MDEP. Work activities during the landfill closure were overseen and inspected by BEI. Soderberg Construction Company of Caribou, Maine was the primary subcontractor to BEI for closure construction activities. Doody, Blackstone, & Bubar Land Surveying of Caribou, Maine provided civil surveying support to BEI. S.W. Cole Engineering, Inc. of Caribou, Maine provided soil sampling and geotechnical testing services

Independent of BEI, URS Consultants, Inc. of Buffalo, New York provided quality assurance (QA) services under contract to AFCEE.

2.0 CONSTRUCTION ACTIVITIES

2.1 SITE ACTIVITIES

Landfill closure activities included site preparation; civil surveying; construction of the landfill cap, including subgrade preparation, placement of common borrow, placement and compaction of barrier soil, placement of topsoil, seeding, and mulching; and placement of warning signs. The major work elements for the site activities are discussed below.

2.1.1 Pre-construction Activities

Pre-construction activities such as placement and covering of ACM from on-base asbestos abatement operations, investigative trenching for confirming extent of asbestos waste boundaries, civil surveying support, installation of groundwater monitoring wells, soil and groundwater sampling and testing were implemented prior to closure of the asbestos landfill. Final loads of ACM were safely placed and covered with common borrow material. A boundary survey was performed to delineate the horizontal extent of ACMs by placing boundary flagging along the ACM placement. A pre-construction conference as required by MDEP Chapter 401 regulations was held prior to the commencement of field activities.

Since the entire asbestos landfill is contained within a natural earthen embankment, no special stormwater run-off or run-on controls were required. However, to prevent temporary run-on into work areas and siltation of the infiltration drainage basin at the base of the landfill, temporary soil erosion and sedimentation controls, including silt fencing and hay bales, were utilized during capping activities.

2.1.2 Subgrade Preparation

Common borrow was used to bring the surface of the asbestos landfill to the approximate subgrade design elevations as specified on the construction design drawings. At no time was the existing ACM material disturbed, cut into, or graded to achieve the proposed subgrade elevations. Common borrow was obtained from BEI-designated areas located adjacent to Landfill 3.

Upon completion of common borrow placement, the area was topographically surveyed to ensure that slopes and grades met the intent of the design and adhered to the slope and cover requirements. A pre-final inspection was held and the subgrade was approved prior to proceeding with placement of the barrier soil (see Appendix C).

2.1.3 Barrier Soil Placement

Upon completion of the common borrow placement, barrier soil was placed and compacted in two 10-in. lifts to the extent of ACM placement as defined by the boundary survey. Barrier soil placement extended to the limits of the staked ACM and a maximum of 5 ft beyond.

In accordance with the technical specifications, the barrier soil material consisted of glacial till, having a maximum particle size of 6-in. and a minimum of 35 percent fines passing the #200 sieve. This material was screened and tested in accordance with barrier soil geotechnical testing requirements contained in Table 3-1 of the Asbestos Landfill Closure Application. To meet the intent of the MDEP regulations, and as specified in the Asbestos Landfill Closure Application, one sample per 1,250 yd^3 was collected from the barrier soil borrow pit and analyzed for moisture/density relationships per ASTM D1557 and grain size per ASTM D422 as the material was excavated for cap construction. The results of the moisture density tests and the sieve analyses are provided in Appendix A.

In accordance with the technical specifications, barrier soil was placed in two 10 in. compacted lifts, for a total of 20 in. of in-place compacted soil. Lift surfaces were smooth and free of pits. Each lift was compacted to at least 90 percent of maximum dry density (modified Proctor). The results of the density tests are provided in Appendix A. The test locations are identified on Drawing 007-DD-003 included in Appendix F.

As specified, barrier soil was originally obtained from a BEI-designated pit near the Underground Transformer Site (UTS) in East Loring. Sampling and analysis performed in 1998 for grain size and moisture/density characteristics met or exceeded all of the requirements for use as a source of barrier material for the asbestos landfill cap. However, during construction, source conditions changed, resulting in a barrier soil material that had a declining fines content and could not meet compaction requirements. An alternative offsite borrow source was tested that met the specifications and the team agreed to change borrow sources (Reference Section 2.2.1)

Barrier soil from Soderberg's Sawyer Road borrow pit was subsequently used for the duration of the closure activities. This material proved to be much more workable. The fines contents met specification and all compaction requirements were met.

The barrier soil lifts were constructed and compacted in such a manner that interface bonding was attained. Excavations were made and interface bonding was confirmed by visual inspection. The location of the interface bond tests are indicated on Drawing 007-DD-003 included in Appendix F.

Placement of the topsoil layer proceeded immediately upon placement of barrier soil. This quick placement of the protective layer limited the potential for desiccation, cracking, and erosion of the low permeability barrier soil.

Approximately 12,000 yd^3 (loose volume) of barrier soil was placed on the asbestos landfill cap.

2.1.4 Topsoil Placement

Topsoil was placed in one lift over the barrier soil surface. Topsoil was obtained from Soderberg's Sawyer Road borrow pit. In accordance with the Asbestos Landfill Closure Application requirements, the topsoil was natural, friable soil, suitable for vigorous growth of vegetation and representative of productive soils in the vicinity. The borrow source was inspected and approved for use by BEI and AFBCA. The topsoil was free of any admixture of subsoil, foreign matter, trash, debris, stumps, rubbish, toxic substances, contamination, or any material that could be harmful to plant growth. Approximately 5,000 yd^3 (loose volume) of topsoil was placed on the landfill cap and surrounding surfaces.

The topsoil from the borrow source was generally free of stones and rocks larger than 2 in. Therefore, to avoid the additional cost of screening, a Request for Information (RFI) was issued and approved to allow the use of unscreened topsoil (Reference Section 3.0).

Prior to placement of topsoil, a portion of the barrier soil was loosened by tracking with a bulldozer, followed by back-blading. The scarification of the top 2 in. of barrier soil, along with the placement of 4 in. of topsoil, was intended to provide a 6 in. thick medium suitable to support and maintain a vegetative cover. Due to concerns raised over the effectiveness of the methods used to loosen the surface of the barrier soil, and after discussions with the Air Force, it was decided that a full 6 in. of topsoil would be placed.

The topsoil was lightly compacted by tracking in with a low ground pressure dozer.

Upon completion of topsoil placement, the entire extent of asbestos landfill cap, as well as any other areas which were disturbed within the asbestos landfill area, were limed, fertilized, seeded, and mulched to promote evapotranspiration and limit erosion of the underlying soils. The seed mix used was a conservation mix as specified by the U.S. Fish and Wildlife Service. The annual rye content of the specified make was increased slightly to obtain earlier growth as requested by the Air Force. Hay mulch was applied with a blower-type mulch spreader.

2.1.5 Miscellaneous Site Activities

A drainage swale was shaped in the middle of the landfill to convey water to the infiltration drainage basin. In the upper portion of the landfill where the slope was less than 8 percent, the swale was lined with North American Green S75 temporary erosion control mat. Below this area, where slopes exceeded 8 percent slope, the swale was lined with North American Green P300.

Upon completion of earthwork activities, asbestos warning signs were posted every 50 ft around the landfill as per MDEP regulations. Signs were placed 10 ft beyond the outer edge of the ACM placement as surveyed and staked. Signs were mounted on 8 ft long DOT approved heavy metal road signs, placed 4 ft into the ground. Fiberglass signs were backed with pressure treated plywood prior to mounting to the sign posts.

Civil survey support was provided to locate the edge of ACM placement, drainage swale location and elevations, lift thickness confirmation tests, density tests, lift interface bonding tests, boundaries, and topography. Refer to Appendix F for As-built drawings.

2.2 MODIFICATIONS TO ORIGINAL DESIGN

Minor modifications to the original design are discussed below.

2.2.1 Request for Information Summary

As previously agreed with the USAF, any changes to the approved design would be submitted formally to the USAF for review and approval using the RFI process.

A total of four RFIs were submitted and approved for the asbestos landfill closure. Copies of these RFI's can be found in Appendix D.

- RFI No. 336: Requested a change in the lift thickness for placing common borrow from 12 in. to 24 in. This approach was effectively used at Landfill 3 and was subsequently approved by AFCEE.

- RFI No. 337: Requested concurrence on the revised boundaries of the asbestos waste. The original drawing was revised based upon field conditions and input from the USAF. The AFCEE approved this RFI.

- RFI No. 338: Requested the use of unscreened topsoil to cover the surface of the asbestos landfill. This avoided extra screening costs. The AFCEE approved this RFI.

- RFI No. 343: Requested approval to obtain barrier soil for the asbestos landfill from Soderberg's Sawyer Road borrow pit instead of the borrow pit near the UTS in East Loring. The USAF approved this RFI.

3.0 INSPECTIONS

BEI planned and executed quality control (QC) oversight for construction of the asbestos landfill cap in accordance with the Asbestos Landfill Closure Application, July 1999. This plan provided the framework for the site QC representative to implement a three-phase inspection process for QC that included each significant definable feature of the work process. The preparatory, initial, and follow-up phases of this approach are discussed below.

The preparatory inspection phase included a discussion of construction activities that would be part of and influence the actual construction work. The preparatory phase began with a meeting to discuss the specific definable features of work and involved the subcontractors, the site engineer, the construction supervisor, the safety and health representative, the QC and QA representatives, and representatives of AFCEE, AFBCA, LDA, and the Base Fire Department.

Items discussed at the preparatory phase meeting included:

- General scope of work for subgrade preparation, barrier soil placement and topsoil placement.
- Access control during cap construction.
- Sediment and erosion control.
- Clearing and grubbing.
- Soil testing requirements.
- As-built survey requirements.
- Safe work practices.

During the initial and follow-up phase, the QC representative provided oversight and inspection of the field work and a daily report to record activities related to the closure of the asbestos landfill. These inspections included witnessing of soil sampling events, compaction testing, and interface bonding tests. It also included independent confirmation that lift thicknesses were being obtained for the various lifts of material.

Soil testing was conducted in accordance with Table 3-1 of the Asbestos Landfill Closure Application. To meet the intent of the MDEP regulations, one sample per 1,250 yd^3 was collected from the barrier soil borrow pit and analyzed for moisture/density relationships and grain size as the material was excavated for cap construction. Testing was not required during placement. The QC representative witnessed each soil sampling event.

Field density tests were conducted on each lift of barrier soil placed and compacted. The QC representative witnessed each test and test locations were located by survey. A total of 21 tests were performed on the first lift of barrier soil and 27 tests were performed on the second lift. The test totals exclude any re-tests. Based upon an approximate barrier soil placement of 2.36 acres, 9 tests per acre were conducted on lift one and 11 tests per acre were conducted on lift two. The requirement was for 9 tests per acre per lift.

The thickness of each lift of each material was continually checked by a spotter, who was using a calibrated rod to confirm proper thickness as the material was being placed and compacted. The QC representative confirmed these lift thickness measurements by independently measuring the thickness of the various materials and lifts after placement. The closure application required that 5 lift thickness confirmations per acre per lift be obtained. Thirty-two lift thickness

confirmations (14 per acre) were obtained for the first lift of barrier soil and 14 (6 per acre) were obtained for the second lift. A total of 20 (9 per acre) lift thickness confirmations were obtained for the placed topsoil.

The QC representative was also required to confirm barrier soil lift interface bonding and soil remolding tests at a rate of 5 per acre per lift. This was facilitated by digging test pits after placement and compaction of the second lift of barrier soil. The test pits were dug to the barrier soil/subgrade interface. BEI opted to excavate these test pits at the same location where density tests had been performed. Total thickness of the placed barrier soil was also measured at these locations and were used as confirmation for the barrier soil second lift thickness. Fourteen excavations were completed (6 per acre) and in each location there was no visually distinct interface between the lifts. This constituted a passing test. Also, in each location, the lift thickness exceeded 20 in. (the minimum thickness of barrier soil).

All barrier soil density and interface bonding test locations and barrier soil and topsoil lift thickness confirmations were located by survey and are include in Appendix E.

A pre-final inspection was performed at the site to ensure that completed work activities complied with the technical and quality requirements of the Asbestos Landfill Closure Application. The pre-final inspection was performed, using criteria from the project work plan, by the BEI QC representative, the AFCEE QA representative (URS), MDEP, AFCEE, and AFBCA. Items identified as needing additional work or adjustments for completion were compiled into a punchlist. A final inspection was performed following completion of the open items from the pre-final inspection. Appendix C contains the 1999 construction season final inspection record. A photo log of site activities is provided in Appendix F.

4.0 LESSONS LEARNED

- Common borrow can be effectively placed and compacted in one 24 in. lift instead of two 12 in. lifts. Using one lift provides a more cost effective construction and reduces the overall construction time.

- The interface bonding tests were probably unnecessary after initial verification that an adequate bond was being achieved. No hint of an interface could be observed between the two lifts in any of the excavations.

- Although unavoidable in this situation (ACM placement did not cease until early September), construction of the landfill cap would have been more effectively implemented if completed earlier in the year. Inclement weather conditions, including rain and frost, created a difficult working situation, particularly with the topsoil.

- Due to the high variability of the barrier soil at the East Loring UTS borrow site, it was difficult to effectively use this material for the asbestos landfill cap. More extensive testing of the borrow source might have identified the potential problem prior to use.

5.0 CERTIFICATION

I, the undersigned engineer, state that, in my professional opinion, work associated with closure of the asbestos landfill was performed in accordance with the respective Asbestos Landfill Closure Application, except for approved field changes.

_____ _____

Carl Dirnbauer, P.E. Date
State of Maine Registration Number _____
Expires _____

6.0 OPERATION AND MAINTENANCE

The Closure Action described in this report does not require a maintenance plan. In the Spring of 2000, minor erosion repair, reseeding and remulching may be necessary. Also, rolling of the surface may be performed if required.

Post-closure monitoring and maintenance of the asbestos landfill site will be performed by others for a period of 30 years following acceptance of closure activities (starting in the Year 2000), in accordance with Chapter 401.6 of the MDEP Regulations.

7.0 REFERENCES

BEI, 1999. *Loring Air Force Base Asbestos Landfill closure Application.* July

Maine Department of Environmental Protection, 1998. *Solid waste Management Regulations, Chapters 400-403, 405, 409, & 418.* November

APPENDIX A

SOIL TEST DATA

SODERBERG CO., INC.
90 Silcock Street ~ Caribou, Maine 04736
Phone (207) 498 6300 ~ Fax (207) 498 6535 e-mail sciencefirm@x.net

SUBMITTAL TRANSMITTAL/TRACKING RECORD

Date Submitted: 11-9-99

To: Bechtel Environmental, Inc.
RR #1, Box 1724
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072
BEI Subcontract Number 22784-051-SC-121

Item #: 5.010A17 SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: *Preliminary Results Onsite/Offsite Testing*

Originator: Soderberg Status: *Submitted for approval*

Notes: SUBMITTED ASBESTOS LANDFILL FIELD DENSITY TEST RESULTS FOR TESTS # 30-64.

Date Returned: BEI Doc. #:

PROJECT: Asbestos Landfill Cover
CLIENT : Soderberg Construction

JOB NUMBER: 99758
PAGE 1

FIELD DENSITY TEST RESULTS

TEST #	TEST DATE	TECH INIT	TEST LOCATION	ELEV FEET	DEPTH INCHES	SAMPLE/ CURVE #	--- IN PLACE --- MOISTURE CONTENT PERCENT	DRY DENSITY PCF	COMPACTION PERCENT	REQUIRED COMPACTION
30	10/20/1999	DWS	64' From BM Tree, 15' From Stake #1	99.7	8	24	9.8	130.1	96.2	90.0
31	10/20/1999	DWS	85' From BM Tree, 56' From Stake #1	99.7	8	24	9.7	125.3	92.6	90.0
32	10/20/1999	DWS	126' From BM Tree, 88' From Stake #1	99.7	8	24	9.1	130.9	96.8	90.0
33	10/20/1999	DWS	104' From BM Tree, 52' From Stake #1	99.7	8	24	8.6	135.6	100.3	90.0
34	10/20/1999	DWS	150' From BM Tree, 98' From Stake #1	99.7	8	24	9.2	132.4	97.9	90.0
35	10/20/1999	DWS	197' From BM Tree, 40' From Stake #2	99.7	8	24	10.2	130.4	96.4	90.0
36	10/20/1999	DWS	204' From BM Tree, 87' From Stake #2	99.7	8	24	11.3	127.8	94.5	90.0
37	10/20/1999	DWS	248' From BM Tree, 107' From Stake #2	99.7	8	24	8.5	133.2	98.5	90.0
38	10/20/1999	DWS	278' From BM Tree, 140' From Stake #2	99.7	8	24	8.2	125.6	92.9	90.0
39	10/20/1999	DWS	282' From BM Tree, 112' From Stake #2	99.7	8	24	10.0	127.7	94.4	90.0
40	10/20/1999	DWS	273' From BM Tree, 72' From Stake #2	99.7	8	24	10.1	126.6	93.6	90.0
41	10/20/1999	DWS	241' From BM Tree, 46' From Stake #2	99.7	8	24	9.3	129.7	95.9	90.0

ELEVATION NOTES:

COMMENTS:

LABORATORY COMPACTION TEST REFERENCE

SAMPLE/ CURVE #	DATE RECEIVED	SAMPLE SOURCE	SOIL DESCRIPTION	TYPE OF TEST	METHOD	OPTIMUM MOISTURE CONTENT PERCENT	MAXIMUM DRY DENSITY PCF
24	10/08/1999	SE CR INPLACE E	BARRIER	ASTM D-1557	C	7.5	135.2

COMMENTS:

S.W. COLE, ENGINEERING, INC.

PROJECT:
CLIENT :

JOB NUMBER: 99758

FIELD DENSITY TEST RESULTS

TEST #	TEST DATE	TECH INIT	TEST LOCATION	ELEV FEET	DEPTH INCHES	SAMPLE/ CURVE #	--- IN PLACE --- MOISTURE CONTENT PERCENT	--- IN PLACE --- DRY DENSITY PCF	COMPACTION PERCENT	REQUIRED COMPACTION
42	10/22/1999	SAA	13' Stake 3, 94' Monitoring Well	99.6	8	26	10.0	124.3	92.7	90.0
43	10/22/1999	SAA	46' Stake 3, 123' Monitoring Well	99.6	8	26	10.9	123.1	91.8	90.0
44	10/22/1999	SAA	104' Stake 3, 144' Monitoring Well	99.6	8	26	10.4	127.7	95.3	90.0
45	10/22/1999	SAA	145' Stake 3, 165' Monitoring Well	99.6	8	26	11.3	127.6	95.2	90.0
46	10/22/1999	SAA	226' Stake 3, 246' Monitoring Well	99.6	8	26	11.4	124.0	92.5	90.0
47	10/22/1999	SAA	202' Stake 3, 191' Monitoring Well	98.8	8	26	10.2	123.0	91.7	90.0
48	10/22/1999	SAA	229' Stake 3, 196' Monitoring Well	98.8	8	26	9.6	127.7	95.3	90.0
49	10/22/1999	SAA	192' Stake 3, 146' Monitoring Well	98.8	8	26	11.1	124.6	92.9	90.0
50	10/22/1999	SAA	166' Stake 3, 136' Monitoring Well	98.8	8	26	10.1	126.4	94.3	90.0
51	10/22/1999	SAA	116' Stake 3, 106' Monitoring Well	98.8	8	26	8.8	129.5	96.6	90.0
52	10/22/1999	SAA	144' Stake 3, 66' Monitoring Well	98.8	8	26	10.2	127.9	95.4	90.0
53	10/22/1999	SAA	146' Stake 3, 48' Monitoring Well	98.8	8	26	9.8	126.0	94.0	90.0
54	10/22/1999	SAA	84' Stake 3, 19' Monitoring Well	98.8	8	26	10.1	122.6	91.4	90.0

ELEVATION NOTES:

COMMENTS:

LABORATORY COMPACTION TEST REFERENCE

SAMPLE/ CURVE #	DATE RECEIVED	SAMPLE SOURCE	SOIL DESCRIPTION	TYPE OF TEST	METHOD	OPTIMUM MOISTURE CONTENT PERCENT	MAXIMUM DRY DENSITY PCF
26	10/08/1999	Sawyer Rd Pit	Barrier N TP 8'	ASTM D-1557	C	10.0	134.0

COMMENTS:

PROJECT: Asbestos Landfill Cover
CLIENT : Soderberg Construction

JOB NUMBER: 99758
PAGE 1

FIELD DENSITY TEST RESULTS

TEST #	TEST DATE	TECH INIT	TEST LOCATION	ELEV FEET	DEPTH INCHES	SAMPLE/ CURVE #	--- IN PLACE --- MOISTURE CONTENT PERCENT	DRY DENSITY PCF	COMPACTION PERCENT	REQUIRED COMPACTION
55	10/26/1999	SAA	39' Well, 143' Stake 3	99.6	8	26	11.5	121.4	90.6	90.0
56	10/26/1999	SAA	55' Well, 154' Stake 3	99.6	8	26	11.1	124.1	92.6	90.0
57	10/26/1999	SAA	106' Well, 182' Stake 3	99.6	8	26	11.8	124.5	92.9	90.0
58	10/26/1999	SAA	80' Well, 120' Stake 3	99.6	8	26	11.5	122.6	91.4	90.0
59	10/26/1999	SAA	130' Well, 140' Stake 3	99.6	8	26	10.4	124.9	93.2	90.0
60	10/26/1999	SAA	140' Well, 200' Stake 3	99.6	8	26	9.6	123.1	91.8	90.0
61	10/26/1999	SAA	182' Well, 220' Stake 3	99.6	8	26	10.7	125.1	93.3	90.0
62	10/26/1999	SAA	227' Well, 257' Stake 3	99.6	8	26	10.4	127.0	94.7	90.0
63	10/26/1999	SAA	235' Well, 278' Stake 3	99.6	8	26	9.9	129.0	96.2	90.0
64	10/26/1999	SAA	273' Well, 295' Stake 3	99.6	8	26	11.1	125.2	93.4	90.0

ELEVATION NOTES:

COMMENTS:

LABORATORY COMPACTION TEST REFERENCE

SAMPLE/ CURVE #	DATE RECEIVED	SAMPLE SOURCE	SOIL DESCRIPTION	TYPE OF TEST	METHOD	OPTIMUM MOISTURE CONTENT PERCENT	MAXIMUM DRY DENSITY PCF
26	10/08/1999	Sawyer Rd Pit	Barrier N TP 8'	ASTM D-1557	C	10.0	134.0

COMMENTS:

SODERBERG CO., INC.
90 Sincock Street ~ Caribou, Maine 04736
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@mfx.net

SUBMITTAL TRANSMITTAL/TRACKING RECORD

Date Submitted: 10/26/99

To: Bechtel Environmental, Inc.
RR #1, Box 1724
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072
BEI Subcontract Number 22784-051-SC-121

Item #: ***5.010A14*** SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: ***Preliminary Results Onsite/Offsite Testing***

Originator: Soderberg Status: ***Submitted for approval***

Notes: *Submitted field density test results for select bedding (tests # 458 thru 488). Also submitted field density test results for asbestos landfill and East Loring underground transformer site (test # 1 thru 29).*

Date Returned: BEI Doc. #:

S.W. COLE, ENGINEERING, INC

PROJECT:
CLIENT :

JOB NUMBER: 99758

FIELD DENSITY TEST RESULTS

TEST #	TEST DATE	TECH INIT	TEST LOCATION	ELEV FEET	DEPTH INCHES	SAMPLE/ CURVE #	--- IN PLACE --- MOISTURE CONTENT PERCENT	DRY DENSITY PCF	COMPACTION PERCENT	REQUIRED COMPACTION
1	8/20/1999	DMH	UTS Site	99.5	12	3	10.4	124.8	88.3	90.0
2	8/20/1999	DMH	50' From #1	99.5	12	3	10.4	129.1	91.3	90.0
3	10/05/1999	SAA	#1 Per Sketch 1	98.8	8	3	11.2	124.6	88.1	90.0
4	10/05/1999	SAA	Retest #3	98.8	8	3	11.1	124.7	88.2	90.0
5	10/05/1999	SAA	#2 Per Sketch 1	98.8	8	3	11.9	121.8	86.2	90.0
6	10/05/1999	SAA	#3 Per Sketch 1	98.8	8	3	12.0	125.6	88.8	90.0
7	10/05/1999	SAA	Retest #6	98.8	8	3	10.6	125.2	88.6	90.0
8	10/05/1999	SAA	#4 Per Sketch 1	98.8	8	3	11.2	123.6	87.4	90.0
9	10/05/1999	SAA	#5 Per Sketch 1	98.8	8	3	9.6	125.4	88.7	90.0
10	10/05/1999	SAA	#6 Per Sketch 1	98.8	8	3	9.9	128.1	90.6	90.0
11	10/05/1999	SAA	#7 Per Sketch 1	98.8	8	3	11.3	120.6	85.3	90.0
12	10/05/1999	SAA	#8 Per Sketch 1	98.8	8	3	11.0	125.4	88.7	90.0
13	10/06/1999	SAA	#9 Per Sketch 1	98.8	8	3	13.9	113.9	80.6	90.0
	10/06/1999	SAA	#10 Per Sketch 1	98.8	8	3	10.1	127.2	90.0	90.0
15	10/06/1999	SAA	#11 Per Sketch 1	98.8	8	3	10.6	126.6	89.6	90.0
16	10/06/1999	SAA	#12 Per Sketch 1	98.8	8	3	11.2	121.9	86.2	90.0
17	10/06/1999	SAA	#13 Per Sketch 1	98.8	8	3	10.5	126.1	89.2	90.0
18	10/06/1999	SAA	Retest #9	98.8	8	3	10.2	125.8	89.0	90.0
19	10/06/1999	SAA	Retest #7	98.8	8	3	12.2	122.2	86.4	90.0
20	10/12/1999	SAA	Retest #5	98.8	8	17	11.6	124.4	90.9	90.0
21	10/12/1999	SAA	Retest #19	98.8	8	17	11.2	127.8	93.4	90.0
22	10/12/1999	SAA	Retest #11	98.8	8	17	12.5	120.5	88.0	90.0
23	10/12/1999	SAA	Retest #22	98.8	8	17	11.6	123.3	90.1	90.0
24	10/12/1999	SAA	Retest #13	98.8	8	17	13.2	120.4	88.0	90.0
25	10/12/1999	SAA	Retest #24	98.8	8	17	12.9	120.0	87.7	90.0
26	10/12/1999	SAA	Retest #16	98.8	8	17	11.0	129.3	94.5	90.0
27	10/12/1999	SAA	Retest #25	98.8	8	17	13.5	120.0	87.7	90.0
28	10/12/1999	SAA	Retest #27	98.8	8	17	13.3	122.0	89.1	90.0
29	10/12/1999	SAA	Retest #28	98.8	8	17	12.8	123.3	90.1	90.0

ELEVATION NOTES:

COMMENTS:

LABORATORY COMPACTION TEST REFERENCE

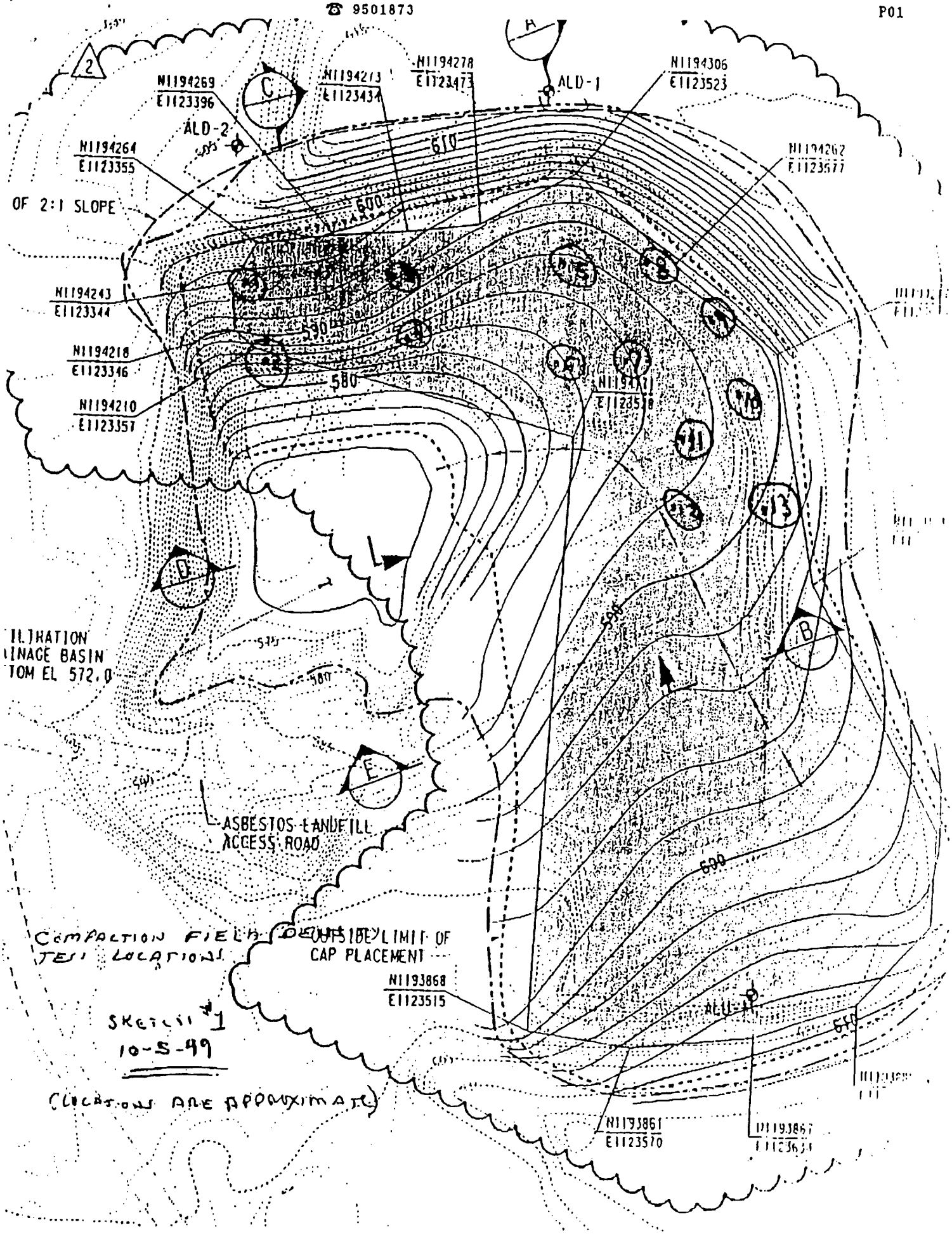
S.W. COLE, ENGINEERING, INC

PROJECT:
CLIENT :

JOB NUMBER: 99758

SAMPLE/ CURVE #	DATE RECEIVED	SAMPLE SOURCE	SOIL DESCRIPTION	TYPE OF TEST	METHOD	OPTIMUM MOISTURE CONTENT PERCENT	MAXIMUM DRY DENSITY PCF
3	8/25/1999	East Loring UTS	Barrier	ASTM D-1557	C	7.0	141.3
17	10/08/1999	E Face Source	Barrier Soil	ASTM D-1557	C	6.7	136.8

COMMENTS: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N1194278
E1123473
ALD-1
N1194306
E1123523
ALD-2
N1194264
E1123355
N1194262
E1123577
OF 2:1 SLOPE
610
600
590
580
N1194243
E1123344
N1194218
E1123346
N1194210
E1123357
N1194231
E1123538
ILTRATION
INAGE BASIN
TOM EL 572.0
ASBESTOS LANDFILL
ACCESS ROAD
COMPACTION FIELD DENSITY TEST LOCATIONS
OUTSIDE LIMIT OF
CAP PLACEMENT
N1193868
E1123515
ALD-1
N1193861
E1123570
N1193867
E1123631
SKETCH #1
10-5-99
LOCATIONS ARE APPROXIMATE

SOUDERBERG CO., INC.
90 Silcock Street ~ Caribou, Maine 04736
Phone (207) 498 6300 ~ Fax (207) 498 6535 e-mail sciencei@mfx.net

SUBMITTAL TRANSMITTAL/TRACKING RECORD

Date Submitted: 11-9-99

To: Bechtel Environmental, Inc.
RR #1, Box 1724
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072
BEI Subcontract Number 22784-051-SC-121

Item #: 5.010 A16 SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: ***Preliminary Results Onsite/Offsite Testing***

Originator: Soderberg Status: ***Submitted for approval***

Notes: • SUBMITTING GRADATION AND MOISTURE DENSITY RELATIONSHIP DATA FOR ASBESTOS LANDFILL BARRIER SOIL SAMPLES 32 & 33

• SUBMITTING LAB MOISTURE RESULTS FOR SAMPLES 34, 35, 36 & 37

Date Returned: BEI Doc. #:

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION
ASTM C-117, C-136

Project No. 99758
Date 10/21/99

Project ASBESTOS LANDFILL

Client SODERBERG CONSTRUCTION

Sample No. 32, BARRIER, SAWYER RD PIT

Sieve Size	Percent Passing	PROJECT Specifications %
6 "	100.0	100
5 "	100.0	
4 "	100.0	
3 "	100.0	
2 "	97.6	
1 1/2 "	95.2	
1 "	92.4	
3/4 "	89.6	
1/2 "	85.1	
1/4 "	76.7	
# 4	73.3	
# 10	65.6	
# 20	58.9	
# 40	54.2	
# 60	50.4	
# 100	47.0	
# 200	44.1	35-100

MOISTURE - DENSITY TEST

ASTM D-1557 Method C
Maximum Dry Density : 134.5 pcf
Optimum Moisture Content : 7.8 %

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N
ASTM C-117, C-136

Project No. 99758
Date 10/28/99

Project ASBESTOS LANDFILL CLOSURE

Client SODERBERG CONSTRUCTION

Sample No. 33, BARRIER, SAWYER ROAD PIT

Sieve Size	Percent Passing	PROJECT Specifications %
6 "	100.0	100
5 "	100.0	
4 "	100.0	
3 "	100.0	
2 "	99.1	
1 1/2 "	97.6	
1 "	93.5	
3/4 "	90.5	
1/2 "	84.5	
1/4 "	76.3	
# 4	73.5	
# 10	65.6	
# 20	58.8	
# 40	54.2	
# 60	50.2	
# 100	46.2	
# 200	41.8	35-100

M O I S T U R E - D E N S I T Y T E S T

ASTM D-1557 Method C
Maximum Dry Density : 134.6 pcf
Optimum Moisture Content : 7.3 %

SAMPLED 10/26/99

S.W.COLE
ENGINEERING, INC.

91 Water St., P. O. Box 220, Caribou, ME 04736 TEL (207) 496-1511 FAX (207) 496-1501
Six Liberty Drive, Bangor, ME 04401 TEL (207) 848-5714 FAX (207) 848-2403
Gray Plaza, P. O. Box 378, Gray, ME 04039 TEL (207) 657-2866 FAX (207) 657-2840
33 Londonderry Rd., #6, Londonderry, NH 03053 TEL (603) 437-9600 FAX (603) 437-9656
RR 3, Box 7230, China Road, Winslow, ME 04901 TEL (207) 873-4283 FAX (207) 873-4977

October 29, 1999

Mr. Keith Brown
SODERBERG CONSTRUCTION
Irving Complex, Washburn Rd.
Caribou, ME 04736

RE: Soil Moisture Content Results
Asbestos Landfill
SWC Job No. #99-758

Dear Keith:

The following laboratory results were obtained from the moisture content tests that were performed on October 26, 1999.

SAMPLE	FIELD DENSITY	FIELD RESULTS	LAB RESULTS
34	FD #61	10.5%	10.7%
35	FD #62	11.1%	10.4%
36	FD #57	11.8%	11.3%
37	FD #59	10.4%	10.4%

Should you have any questions, please feel free to contact me.

Sincerely,

Adelbert W. Sutherland
S. W. COLE ENGINEERING, INC.

AWS:dmh

SODERBERG CO., INC.
90 Sincock Street ~ Caribou, Maine 04736
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@mfx.net

SUBMITTAL TRANSMITTAL/TRACKING RECORD

Date Submitted: 10/26/99

To: Bechtel Environmental, Inc.
RR #1, Box 1724
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072
BEI Subcontract Number 22784-051-SC-121

Item #: ***5.010A13*** SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: ***Preliminary Results Onsite/Offsite Testing***

Originator: Soderberg Status: ***Submitted for approval***

Notes: *Submitted gradation and moisture density relationship for select bedding sample # 152. Also submitted gradation and moisturedensity data for asbestos landfill barrier soil samples #5 & 6.*

Date Returned: BEI Doc. #:

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N
ASTM C-117, C-136

Project No. 99758
Date 10/07/99

Project ASBESTOS LANDFILL

Client SODERBERG CONSTRUCTION

Sample No. 5, BARRIER, E FACE OF SOURCE

Sieve Size	Percent Passing	PROJECT Specifications %
6 "	100.0	100
5 "	100.0	
4 "	100.0	
3 "	100.0	
2 "	94.0	
1 1/2 "	91.6	
1 "	86.5	
3/4 "	82.9	
1/2 "	78.3	
1/4 "	69.4	
# 4	66.0	
# 10	58.4	
# 20	52.4	
# 40	48.4	
# 60	44.6	
# 100	40.6	
# 200	35.0	35-100

M O I S T U R E - D E N S I T Y T E S T

ASTM D-1557 Method C
Maximum Dry Density : 132.2 pcf
Optimum Moisture Content : 8.7 %

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION
ASTM C-117, C-136

Project No. 99758
Date 10/07/99

Project ASBESTOS LANDFILL

Client SODERBERG CONSTRUCTION

Sample No. 6, BARRIER, W FACE OF SOURCE

Sieve Size	Percent Passing	PROJECT Specifications %
6 "	100.0	100
5 "	100.0	
4 "	100.0	
3/ "	100.0	
2 "	100.0	
1 1/2 "	98.3	
1 "	93.4	
3/4 "	89.0	
1/2 "	85.4	
1/4 "	76.8	
# 4	73.2	
# 10	64.8	
# 20	58.0	
# 40	53.2	
# 60	48.9	
# 100	44.4	
# 200	40.0	35-100

MOISTURE - DENSITY TEST

ASTM D-1557 Method C
Maximum Dry Density : 134.8 pcf
Optimum Moisture Content : 7.9 %

SODERBERG CO., INC.
90 Sincock Street ~ Caribou, Maine 04736
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: sciene@mfx.net

SUBMITTAL TRANSMITTAL/TRACKING RECORD

Date Submitted: 10/12/99

To: Bechtel Environmental, Inc.
RR #1, Box 1724
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072
BEI Subcontract Number 22784-051-SC-121

Item #: ***5.010A12*** SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: ***Preliminary Results Onsite/Offsite Testing***

Originator: Soderberg Status: ***Submitted for approval***

Notes: *Submitted moisture density data for samples taken from Soderberg Sawyer Road Borrow Pit. These samples are intended for use as material for barrier soil at the asbestos landfill. Submitted samples # 25, 26, 27, 28.*

Date Returned: BEI Doc. #:

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N
ASTM C-117, C-136

Project No. 99758
Date 10/08/99

Project ASBESTOS LANDFILL

Client SODERBERG CONSTRUCTION

Sample No. 25, BARRIER, SAWYER RD PIT, N TP 5

Sieve Size	Percent Passing	PROJECT Specifications %
6 "	100.0	100
5 "	100.0	
4 "	100.0	
3 "	100.0	
2 "	100.0	
1 1/2 "	99.7	
1 "	99.4	
3/4 "	97.8	
1/2 "	95.2	
1/4 "	88.4	
# 4	85.2	
# 10	76.6	
# 20	69.5	
# 40	64.4	
# 60	60.0	
# 100	54.8	
# 200	50.9	35-100

M O I S T U R E - D E N S I T Y T E S T

ASTM D-1557 Method C
Maximum Dry Density : 133.5 pcf
Optimum Moisture Content : 6.8 %

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N
ASTM C-117, C-136

Project No. 99758
Date 10/08/99

Project ASBESTOS LANDFILL

Client SODERBERG CONSTRUCTION

Sample No. 26, BARRIER, SAWYER RD PIT, N TP 8'

Sieve Size	Percent Passing	PROJECT Specifications %
6 "	100.0	100
5 "	100.0	
4 "	100.0	
3 "	100.0	
2 "	98.6	
1 1/2 "	97.0	
1 "	92.0	
3/4 "	88.6	
1/2 "	86.7	
1/4 "	79.0	
# 4	75.9	
# 10	67.7	
# 20	60.8	
# 40	56.0	
# 60	51.8	
# 100	47.7	
# 200	42.7	35-100

M O I S T U R E - D E N S I T Y T E S T

ASTM D-1557 Method C
Maximum Dry Density : 134.0 pcf
Optimum Moisture Content : 10.0 %

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION
ASTM C-117, C-136

Project No. 99758
Date 10/08/99

Project ASBESTOS LANDFILL

Client SODERBERG CONSTRUCTION

Sample No. 27, BARRIER, SAWYER RD PIT - S TP 5'

Sieve Size	Percent Passing	PROJECT Specifications %
6 "	100.0	100
5 "	100.0	
4 "	100.0	
3 "	100.0	
2 "	100.0	
1 1/2 "	99.4	
1 "	96.7	
3/4 "	94.0	
1/2 "	89.6	
1/4 "	81.6	
# 4	78.8	
# 10	70.9	
# 20	64.0	
# 40	59.1	
# 60	54.6	
# 100	49.4	
# 200	44.9	35-100

MOISTURE - DENSITY TEST

ASTM D-1557 Method C
Maximum Dry Density : 130.0 pcf
Optimum Moisture Content : 8.6 %

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION
ASTM C-117, C-136

Project No. 99758
Date 10/08/99

Project ASBESTOS LANDFILL

Client SODERBERG CONSTRUCTION

Sample No. 28, BARRIER / SAWYER RD PIT - S. T. 6

Sieve Size	Percent Passing	PROJECT Specifications %
6 "	100.0	100
5 "	100.0	
4 "	100.0	
3 "	100.0	
2 "	99.2	
1 1/2 "	95.2	
1 "	91.7	
3/4 "	87.9	
1/2 "	83.0	
1/4 "	73.1	
# 4	69.3	
# 10	61.6	
# 20	55.0	
# 40	50.5	
# 60	46.5	
# 100	43.1	
# 200	38.8	35-100

MOISTURE - DENSITY TEST

ASTM D-1557 Method C
Maximum Dry Density : 132.5 pcf
Optimum Moisture Content : 8.3 %

SODERBERG CO., INC.
90 Sincock Street ~ Caribou, Maine 04736
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@mfx.net

SUBMITTAL TRANSMITTAL/TRACKING RECORD

Date Submitted: 10/12/99

To: Bechtel Environmental, Inc.
RR #1, Box 1724
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072
BEI Subcontract Number 22784-051-SC-121

Item #: ***5.010A10*** SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: ***Preliminary Results Onsite/Offsite Testing***

Originator: Soderberg Status: ***Submitted for approval***

Notes: *Submitted Moisture Density Data for samples taken from East Loring Borrow Source for use as barrier soil at asbestos landfill. Sumbitted samples # 17, 23, 24.*

Date Returned: BEI Doc. #:

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N
ASTM C-117, C-136

Project No. 99758
Date 10/08/99

Project ASBESTOS LANDFILL

Client SODERBERG CONSTRUCTION

Sample No. 17, BARRIER SOIL, E FACE OF SOURCE

Sieve Size	Percent Passing	PROJECT Specifications %
6 "	100.0	100
5 "	100.0	
4 "	100.0	
3 "	100.0	
2 "	97.7	
1 1/2 "	93.3	
1 "	90.0	
3/4 "	86.9	
1/2 "	82.4	
1/4 "	74.5	
# 4	71.1	
# 10	62.5	
# 20	55.4	
# 40	50.6	
# 60	46.2	
# 100	42.1	
# 200	37.6	35-100

M O I S T U R E - D E N S I T Y T E S T

ASTM D-1557 Method C
Maximum Dry Density : 136.8 pcf
Optimum Moisture Content : 6.7 %

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N
ASTM C-117, C-136

Project No. 99758
Date 10/08/99

Project ASBESTOS LANDFILL

Client SODERBERG CONSTRUCTION

Sample No. 23, BARRIER, N END IN PLACE, E LORING

Sieve Size	Percent Passing	PROJECT Specifications %
6 "	100.0	100
5 "	100.0	
4 "	100.0	
3 "	100.0	
2 "	100.0	
1 1/2 "	98.3	
1 "	95.2	
3/4 "	92.0	
1/2 "	84.6	
1/4 "	76.8	
# 4	73.9	
# 10	66.6	
# 20	60.3	
# 40	55.9	
# 60	51.9	
# 100	47.5	
# 200	42.4	35-100

M O I S T U R E - D E N S I T Y T E S T

ASTM D-1557 Method C
Maximum Dry Density : 130.7 pcf
Optimum Moisture Content : 10.0 %

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N
ASTM C-117, C-136

Project No. 99758
Date 10/08/99

Project : ASBESTOS LANDFILL

Client : SODERBERG CONSTRUCTION

Sample No. : 24, BARRIER, SE CORNER INPLACE-E LORING

Sieve Size	Percent Passing	PROJECT Specifications %
6 "	100.0	100
5 "	100.0	
4 "	100.0	
3 "	100.0	
2 "	100.0	
1 1/2 "	97.7	
1 "	91.8	
3/4 "	86.0	
1/2 "	81.0	
1/4 "	72.3	
# 4	69.0	
# 10	61.2	
# 20	54.7	
# 40	50.2	
# 60	46.2	
# 100	42.4	
# 200	37.0	35-100

M O I S T U R E - D E N S I T Y T E S T

ASTM D-1557 Method C
Maximum Dry Density : 135.2 pcf
Optimum Moisture Content : 7.5 %

SODERBERG CO., INC.
90 Sincock Street ~ Caribou, Maine 04736
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@mfx.net

SUBMITTAL TRANSMITTAL/TRACKING RECORD

Date Submitted: 8/30/99

To: Bechtel Environmental, Inc.
RR #1, Box 1724
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072
BEI Subcontract Number 22784-051-SC-121

Item #: ***5.010A1*** SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: ***Preliminary Results Onsite/Offsite Testing***

Originator: Soderberg Status: ***Submitted for approval***

Notes: *Submitted gradation test results for select bedding samples 110, 116, 117, 118. Submitted moisture/density relationship data for select bedding samples 110, 116, 118. Submitted Barrier soil gradation results for material from the East Loring area adjacent to the Underground Transformer Site (samples # 1 & 3). Submitted Barrier soil moisture/density relationship data for material from the East Loring area adjacent to the Underground Transformer Site (samples # 1 & 3).*

Date Returned: BEI Doc. #:

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N
ASTM C-117, C-136

Project No. 99758
Date 08/25/99

Project ASBESTOS LANDFILL

Client SODERBERG CONSTRUCTION

Sample No. 1, BARRIER, EAST LORING UTS

Sieve Size	Percent Passing	PROJECT Specifications %
3 "	100.0	
2 "	97.7	100
1 1/2 "	97.3	
1 "	95.3	
3/4 "	93.8	80-100
1/2 "	91.6	
1/4 "	88.5	
# 4	87.3	
# 10	83.8	
# 20	80.9	
# 40	78.9	45-85
# 60	77.2	
# 100	75.0	
# 200	72.5 *	30-70

* Does not meet project specifications

M O I S T U R E - D E N S I T Y T E S T

ASTM D-1557 Method C
Maximum Dry Density : 132.1 pcf
Optimum Moisture Content : 8.4 %

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N
ASTM C-117, C-136

Project No. 99758
Date 08/25/99

Project ASBESTOS LANDFILL

Client SODERBERG CONSTRUCTION

Sample No. 3, BARRIER, EAST LORING UTS

Sieve Size	Percent Passing	PROJECT Specifications %
3 "	100.0	100
2 "	97.9	
1 1/2 "	97.3	
1 "	92.3	80-100
3/4 "	89.0	
1/2 "	85.2	
1/4 "	78.3	
# 4	75.3	
# 10	67.5	
# 20	61.0	45-85
# 40	56.1	
# 60	51.8	
# 100	47.4	
# 200	42.0	30-70

M O I S T U R E - D E N S I T Y T E S T

ASTM D-1557 Method C
Maximum Dry Density : 141.3 pcf
Optimum Moisture Content : 7.0 %

SODERBERG CO., INC.
90 Sincock Street ~ Caribou, Maine 04736
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: sciene@mfx.net

SUBMITTAL TRANSMITTAL/TRACKING RECORD

Date Submitted: 10/7/99

To: Bechtel Environmental, Inc.
RR #1, Box 1724
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072
BEI Subcontract Number 22784-051-SC-121

Item #: ***5.010A3*** SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: ***Preliminary Results Onsite/Offsite Testing***

Originator: Soderberg Status: ***Submitted for approval***

Notes: *Submitted Source Results for East Loring Borrow Area. Submitting Gradation Results for Samples 1,2,3,& 4. Submitted Moisture Density Test Results for Samples 1 & 3.*

Date Returned: BEI Doc. #:

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N
ASTM C-117, C-136

Project No. 99758
Date 08/25/99

Project ASBESTOS LANDFILL

Client SODERBERG CONSTRUCTION

Sample No. 1, BARRIER, EAST LORING UTS

Sieve Size	Percent Passing		PROJECT Specifications %
3 "	100.0	- - - - - - - - -	~~100~~
2 "	97.7		
1 1/2 "	97.3		
1 "	95.3	- - - - - - - - -	~~80-100~~
3/4 "	93.8		
1/2 "	91.6		
1/4 "	88.5		
# 4	87.3		
# 10	83.8		
# 20	80.9	- - - - - - - - -	~~45-85~~
# 40	78.9		
# 60	77.2		
# 100	75.0		
# 200	72.5	* - - - - - - - - -	~~30-70~~ 35(MIN)

* ~~Does not meet project specifications~~

M O I S T U R E - D E N S I T Y T E S T

ASTM D-1557 Method C
Maximum Dry Density : 132.1 pcf
Optimum Moisture Content : 8.4 %

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION
ASTM C-117, C-136

Project No. 99758
Date 08/25/99

Project ASBESTOS LANDFILL

Client SODERBERG CONSTRUCTION

Sample No. 2, BARRIER, EAST LORING UTS

Sieve Size	Percent Passing	PROJECT Specifications %
3 "	100.0	~~100~~
2 "	97.4	
1 1/2 "	93.8	
1 "	88.7	~~80-100~~
3/4 "	82.9	
1/2 "	78.0	
1/4 "	70.1	
# 4	67.1	
# 10	59.9	
# 20	53.4	~~45-85~~
# 40	48.4	
# 60	43.9	
# 100	39.2	
# 200	33.7	~~30-70~~ 35(min)

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N
ASTM C-117, C-136

Project No. 99758
Date 08/25/99

Project ASBESTOS LANDFILL

Client SODERBERG CONSTRUCTION

Sample No. 3, BARRIER, EAST LORING UTS

Sieve Size	Percent Passing		PROJECT Specifications %
3 "	100.0	- - - - - - - - -	~~100~~
2 "	97.9		
1 1/2 "	97.3		
1 "	92.3	- - - - - - - - -	~~80-100~~
3/4 "	89.0		
1/2 "	85.2		
1/4 "	78.3		
# 4	75.3		
# 10	67.5		
# 20	61.0	- - - - - - - - -	~~45-85~~
# 40	56.1		
# 60	51.8		
# 100	47.4		
# 200	42.0	- - - - - - - - -	~~30-70~~ 35 (min)

M O I S T U R E - D E N S I T Y T E S T

ASTM D-1557 Method C
Maximum Dry Density : 141.3 pcf
Optimum Moisture Content : 7.0 %

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N
ASTM C-117, C-136

Project No. 99758
Date 08/25/99

Project ASBESTOS LANDFILL

Client SODERBERG CONSTRUCTION

Sample No. 4, BARRIER, EAST LORING UTS

Sieve Size	Percent Passing	PROJECT Specifications %
3 "	100.0	~~100~~
2 "	95.7	
1 1/2 "	89.7	
1 "	83.7	~~80-100~~
3/4 "	78.9	
1/2 "	73.9	
1/4 "	67.6	
# 4	64.9	
# 10	58.4	
# 20	53.0	~~45-85~~
# 40	48.9	
# 60	45.3	
# 100	41.8	
# 200	36.8	~~30-70~~ 35(MIN)

SODERBERG CO., INC.
90 Sincock Street ~ Caribou, Maine 04736
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@mfx.net

SUBMITTAL TRANSMITTAL/TRACKING RECORD

Date Submitted: 10/26/99

To: Bechtel Environmental, Inc.
RR #1, Box 1724
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072
BEI Subcontract Number 22784-051-SC-121

Item #: ***5.010A15*** SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: ***Preliminary Results Onsite/Offsite Testing***

Originator: Soderberg Status: ***Submitted for approval***

Notes: *Submitted lab moisture test results for moilsture samples of select bedding and barrier soil.*

SET DATED 10-8-99
SET DATED 10-12-99
SET DATED 10-21-99

Date Returned: BEI Doc. #:

S.W.COLE
ENGINEERING, INC.
GEOTECHNICAL CONSULTANTS

161 Water St., P. O. Box 220, Caribou, ME 04736 TEL (207) 496-1511 FAX (207) 496-1501
Six Liberty Drive, Bangor, ME 04401 TEL (207) 848-5714 FAX (207) 848-2403
Gray Plaza, P. O. Box 378, Gray, ME 04039 TEL (207) 657-2866 FAX (207) 657-2840

October 8, 1999

Mr. Keith Brown
Soderberg Construction
Irving Complex, Washburn Road
Caribou, ME 04736

RE: Soil Moisture Content Results
Asbestos Landfill
SWC Job No. #99-758

Dear Keith:

The following laboratory results were obtained from the soil samples submitted on October 5th and 6th, 1999.

SAMPLE #	LAB RESULT
7	15.2%
8	11.1%
9	13.6%
10	10.7%
11	11.9%
12	11.0%
13	12.7%
14	11.1%
15	12.5%
16	10.4%
18	12.6%
19	10.4%
20	15.3%
21	13.6%
22	13.3%

Should you have any questions, please feel free to contact me.

Sincerely,

Adelbert W. Sutherland
S. W. COLE ENGINEERING, INC.

S.W.COLE
ENGINEERING, INC.
GEOTECHNICAL CONSULTANTS

161 Water St., P. O. Box 220, Caribou, ME 04736 TEL (207) 496-1511 FAX (207) 496-1501
Six Liberty Drive, Bangor, ME 04401 TEL (207) 848-5714 FAX (207) 848-2403
Gray Plaza, P. O. Box 378, Gray, ME 04039 TEL (207) 657-2866 FAX (207) 657-2840

October 21, 1999

Mr. Keith Brown
SODERBERT CONSTRUCTION
Irving Complex, Washburn Rd.
Caribou, ME 04736

RE: Soil Moisture Content Results
Asbestos Landfill
SWC Job No. #99-758

Dear Keith:

The following laboratory results were obtained from the moisture content tests that were performed on October 20, 1999.

SAMPLE	IDENTIFICATION	MOISTURE CONTENT
29	FD #30	10.2%
30	FD #34	10.1%
31	FD #40	9.6%

Should you have any questions, please feel free to contact me.

Sincerely,

Adelbert W. Sutherland
S. W. COLE ENGINEERING, INC.

AWS:dmh

SODERBERG CO., INC.
90 Sincock Street ~ Caribou, Maine 04736
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: sciene@mfx.net

SUBMITTAL TRANSMITTAL/TRACKING RECORD

Date Submitted: 10/12/99

To: Bechtel Environmental, Inc.
RR #1, Box 1724
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072
BEI Subcontract Number 22784-051-SC-121

Item #: ***5.010A7*** SpecSect: SOW 051-SOW-121 Sec. 4.0

Submittal: ***Preliminary Results Onsite/Offsite Testing***

Originator: Soderberg Status: ***Submitted for approval***

Notes: *Submitted copy of field moisture test results for samples taken from East Loring borrow source.*

Date Returned: BEI Doc. #:

S.W.COLE
ENGINEERING, INC.
GEOTECHNICAL CONSULTANTS

161 Water St., P. O. Box 220, Caribou, ME 04736 TEL (207) 496-1511 FAX (207) 496-1501
Six Liberty Drive, Bangor, ME 04401 TEL (207) 848-5714 FAX (207) 848-2403
Gray Plaza, P. O. Box 378, Gray, ME 04039 TEL (207) 657-2866 FAX (207) 657-2840

October 8, 1999

Mr. Keith Brown
Soderberg Construction
Irving Complex, Washburn Road
Caribou, ME 04736

RE: Soil Moisture Content Results
Asbestos Landfill
SWC Job No. #99-758

Dear Keith:

The following laboratory results were obtained from the soil samples submitted on October 5th and 6th, 1999.

SAMPLE #	LAB RESULT
7	15.2%
8	11.1%
9	13.6%
10	10.7%
11	11.9%
12	11.0%
13	12.7%
14	11.1%
15	12.5%
16	10.4%
18	12.6%
19	10.4%
20	15.3%
21	13.6%
22	13.3%

Should you have any questions, please feel free to contact me.

Sincerely,

Adelbert W. Sutherland
S. W. COLE ENGINEERING, INC.

APPENDIX B

MISCELLANEOUS MATERIALS TEST DATA

SODERBERG CO., INC.
90 Sincock Street ~ Caribou, Maine 04736
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@mfx.net

SUBMITTAL TRANSMITTAL/TRACKING RECORD

Date Submitted: 7/27/99

To: Bechtel Environmental, Inc.
RR #1, Box 1724
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072
BEI Subcontract Number 22784-051-SC-121

Item #: ***5.013*** SpecSect: Spec 000-SP-02935, Sec. 3.02

Submittal: ***Topsoil Nutrient Analysis***

Originator: Soderberg Status: ***Submitted for approval***

Notes: *Submitted a copy of the analysis report prepared by Aroostook Testing and Consulting Laboratory. This report contains analysis results of topsoil from both the Soderberg Sawyer Road Pit and the Soderberg Grimes Road Pit.*

Date Returned: BEI Doc. #:

aroostook
TESTING & CONSULTING
laboratory

675 Central Drive, Skyway Industrial Park Presque Isle, Maine 04769 Phone (207) 762-5771

ANALYSIS REPORT

SAMPLE #	50758	50561
DESCRIPTION	Grimesmills	Sawyer Rd. Pit

CLIENT
Attn: Keith Brown
Fax:498-6535

Soderburg Construction, Ph# 498-6300
460 York Street
Caribou, ME 04736

RECEIVED REPORTED

	pH	N	P	K	Ca	Mg
50758	5.6	<10	27	900	1000	150
50561	5.2	16	42	1100	900	160

RECOMMENDATIONS:
100 lbs Diamonium Phosphate
50 lbs Amonium Nitrate
30 lbs Grass Seed per Acre
2 tons per Acre of calcitic Lime
No Magnesium in Limestone
If possible use the Sawyer Rd. Pit Material on top.

G.N. CURRIE II, M.Sc., Ph. D.

G. NOEL CURRIE III, B. Sc.

SODERBERG CO., INC.
90 Sincock Street ~ Caribou, Maine 04736
Phone (207) 498-6300 ~ Fax (207) 498-6535 e-mail: scicme@mfx.net

SUBMITTAL TRANSMITTAL/TRACKING RECORD

Date Submitted: 8/10/99

To: Bechtel Environmental, Inc.
RR #1, Box 1724
Limestone, ME 04750

Attention: PDCC AFCEE/ Loring AFB STR Earthwork SC

Re: Earthwork at Landfill 3
Bechtel Job No. 22784, AFCEE Contract No. F41624-94-D-8072
BEI Subcontract Number 22784-051-SC-121

Item #: 5.003 ***not numbered*** SpecSect: 000-SP-02935, Sect 1.03C

Submittal: ***Seed material and soil additive certificates***

Originator: Soderberg Status: ***Submitted for information***

Notes: *Submitted certificates of analysis for Special Conservation mix Seed, 18-24-12 fertilizer, and limestone.*

Date Returned: BEI Doc. #:

ProSeeds Marketing, Inc.

13963 Westside Lane South, Jefferson, OR 97352
Telephone: (541) 928-9999 Fax: (541) 924-5695

8/3/99 CERTIFICATE OF COMPLIANCE SPECIAL CONSERVATION GRASS SEED MIXTURE

		MAX WEED	MIN GERM.	P L S	LOT NUMBER	CERTIFICATE NUMBER
31.25% TRIFOLIUM REPENS	WHITE CLOVER, HIAFA	0.00%	90.00%	89.91%	AUS/FS9093	99-8180
18.75% PANICUM VIRGATUM	SWITCHGRASS, DACOTAH	0.10%	75.00%	74.91%	98-9586	8734
18.75% LOTUS TREFOIL	BIRDSFOOT TREFOIL, EMPIRE	0.19%	86.00%	85.62%	23942	2239
18.75% FESTUCA ARUNDINACEA	TALL FESCUE, FAWN	0.08%	90.00%	91.30%	L39-8-F2	L1086-B
12.50% AGROSTIS ALBA	REDTOP, RETON	0.00%	90.00%	90.63%	L73-8-73RTB	L2716-8
100.00%		0.06%	86.43%	86.64%		

Certificate of Complaisance

AGRICULTURAL LIMESTONE
High Calcium – Conditioned

CHEMICAL SPECIFICATION

Calcium – Ca	—	37.5%
Calcium Carbonate – $CaCo_3$	—	93.9%
Neutralizing Value	—	94.0%
Alumina – Al_2O_3	—	.51%
Magnesium Carbonate – $MgCo_3$	—	.99%
Ferric Oxide – Fe_2O_3	—	2.93%
Silica – SiO_2	—	.33%
*Moisture – H_2O	—	4.1%

PHYSICAL SPECIFICATIONS

Mesh Size = U.S.	8	10	20	30	60	100
Percent Passing	99%	98%	89.7%	70.9%	68.2%	59.7%

Packaging – Bulk and 40 Kg Bags

Havelock Lime has been manufacturing the highest grade of calcium aglime available in the maritime region for over 50 years. Our aglime is ground to a fineness which gives optimum performance during the growing year applied, as well as having retention value after the crops are removed.

Havelock's aglime assures that soil calcium depleted by leaching, erosion and/or crop removal will be returned to the soil promoting better overall availability of those nutrients essential for healthy crop growth. Improves the ability of growing crops to utilize them and increases the efficiency of high cost fertilizers.

*This product is also available dry.

The technical data contained herein are quoted as typical values and are believed to be reliable. Havelock Lime makes no guarantee of results from use or assumes no obligation or liability in connection with the same.

HAVELOCK LIME • P.O. Box 59, Havelock, N.B. E0A 1W0 • Phone (506) 534-2311 Fax 534-8241

1-800-561-LIME

No MSDS Sheet is required on this product as it is inert.

NUTRITE

Nutrite Corp.

CERTIFICATE OF COMPLIANCE

Proscape
18 – 24 – 12
Professional Fertilizer

Guaranteed Analysis

Total Nitrogen (N)	18.0	%
9.30 % Ammoniacal Nitrogen		
8.27 % Urea Nitrogen*		
0.43 % Water Insoluable Nitrogen		
Available Phosphate (P_2O_5)	24.0	%
Soluble Potash (K_2O)	12.0	%
Sulfur (S)	3.24	%
Iron (Fe)	0.73	%
Magnesium (Mg)	0.05	%
Calcium (Ca)	0.18	%

Primary plant food nutrients derived from: **Urea, Sulfer Coated Poly Coated Urea, Diammonium Phosphate, Muriate of Potash**

Secondary plant food nutrients derived from: **Bio Solids**

* Contains 8.30 % Slowly available Urea from: **Poly Coated Urea**

Thomas D. Nelson

a subsidiary of
Hydro Agri North America, Inc.
358 Leeds Junction Road
Wales, Maine 04280

APPENDIX C

INSPECTION REPORTS

Pre-Final Construction Inspection Checklist

Site Name: Asbestos Landfill Final Cap Date: 9/30/99

General Work Description: Preparation of Subgrade

Attendees: DAVE HOPKINS
BYRON BEST
GREG LANDEEN
BRENT PETERSON
BOB VAUGHAN

Punchlist Items or Observations: (Use additional sheets as needed)

Inspected Item	Complete? QC	QA
* 1. Common borrow excavated and placed to established subgrade elevations and grades.	☐	☐
2. Subgrade compacted using four passes with a smooth drum compactor.	☑	☑
3. Subgrade reworked/replaced as necessary to verify a firm, stable surface.	☑	☑
4. Debris and protrusions greater than 3 inches above smoothed surface rolled or removed.	☐	☐
5. Surface free of standing water.	☑	☑

Area(s) inspected:

See attached drawing for subgrade areas to be approved.

Additional Observations: (Use additional sheets as needed)

1 STAKE SWALE AND INSTALL COMMON BORROW TO DEPTH ALLOWED
2 * VERIFY SLOPES AND ELEVATIONS
3 REMOVE ORGANIC MATTER (STICKS, ETC) AND RE-ROLL
4

Byron B. Best
QA Representative

QC Representative

Pre-Final Construction Inspection Checklist 10003

Site Name: Asbestos Landfill Final Cap Date: 10/1/99

General Work Description: Preparation of Subgrade

Attendees: BYRON BEST
CARL DIRNBAUER
JOE DUNCAN
BOB VAUGHAN

Punchlist Items or Observations: (Use additional sheets as needed)

Inspected Item	Complete? QC	QA
1. Common borrow excavated and placed to established subgrade elevations and grades.	✓	✓
* 2. Subgrade compacted using four passes with a smooth drum compactor.	✓	✓
* 3. Subgrade reworked/replaced as necessary to verify a firm, stable surface.	✓	✓
** 4. Debris and protrusions greater than 3 inches above smoothed surface rolled or removed.		
* 5. Surface free of standing water.	✓	✓

Area(s) inspected:

See attached drawing for subgrade areas to be approved.

Additional Observations: (Use additional sheets as needed)

1 * OK FROM 9/30/99. SEE PREVIOUS PRE-FINAL

2 ** TO BE RECHECKED 10/2/99.

3

4

Byron B. Best
QA Representative

QC Representative

10188 · 1

Pre-Final Construction Inspection Checklist

Site Name: Asbestos Landfill Final Cap Date: 10/22/99

General Work Description: Barrier Soil Placement

Attendees: BYRON BEST

RICH WHEELER

Punchlist Items or Observations: (Use additional sheets as needed)

Inspected Item	Complete? QC	QA
1. Barrier soil placed to established grades and elevations.	☑	☑
2. Placed in lifts with a maximum thickness of 10 inches in-place, compacted soil per lift for a total of 20 inches of in-place, compacted soil.	☑	☑
3. Lifts constructed in such a manner that provides for interface bonding (e.g., scarifying or use of sheep's foot roller)	☑	☑
4. Testing complete and acceptable.	☑	☑
	☐	☐

Area(s) inspected:

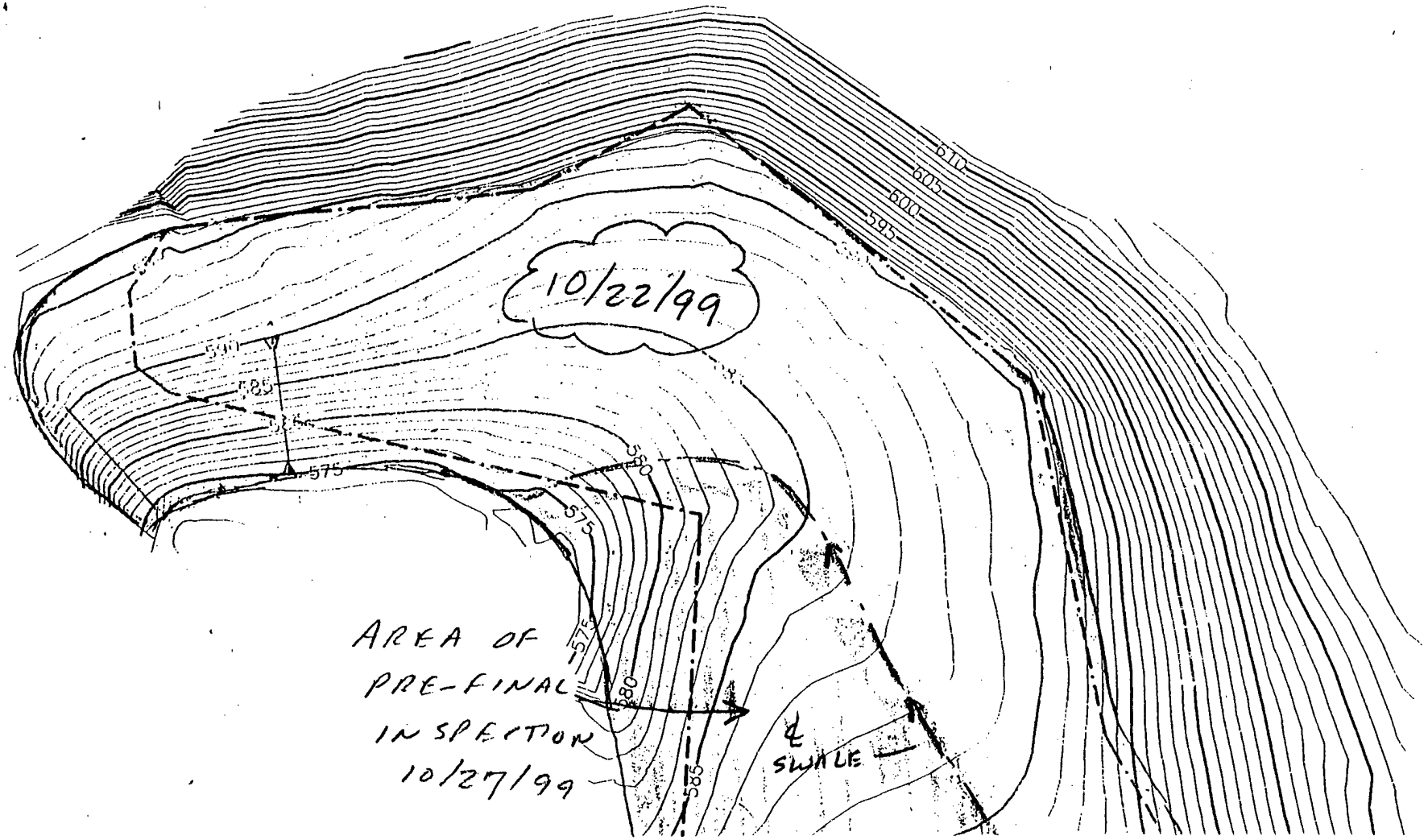
See attached drawing for barrier soil areas to be approved.

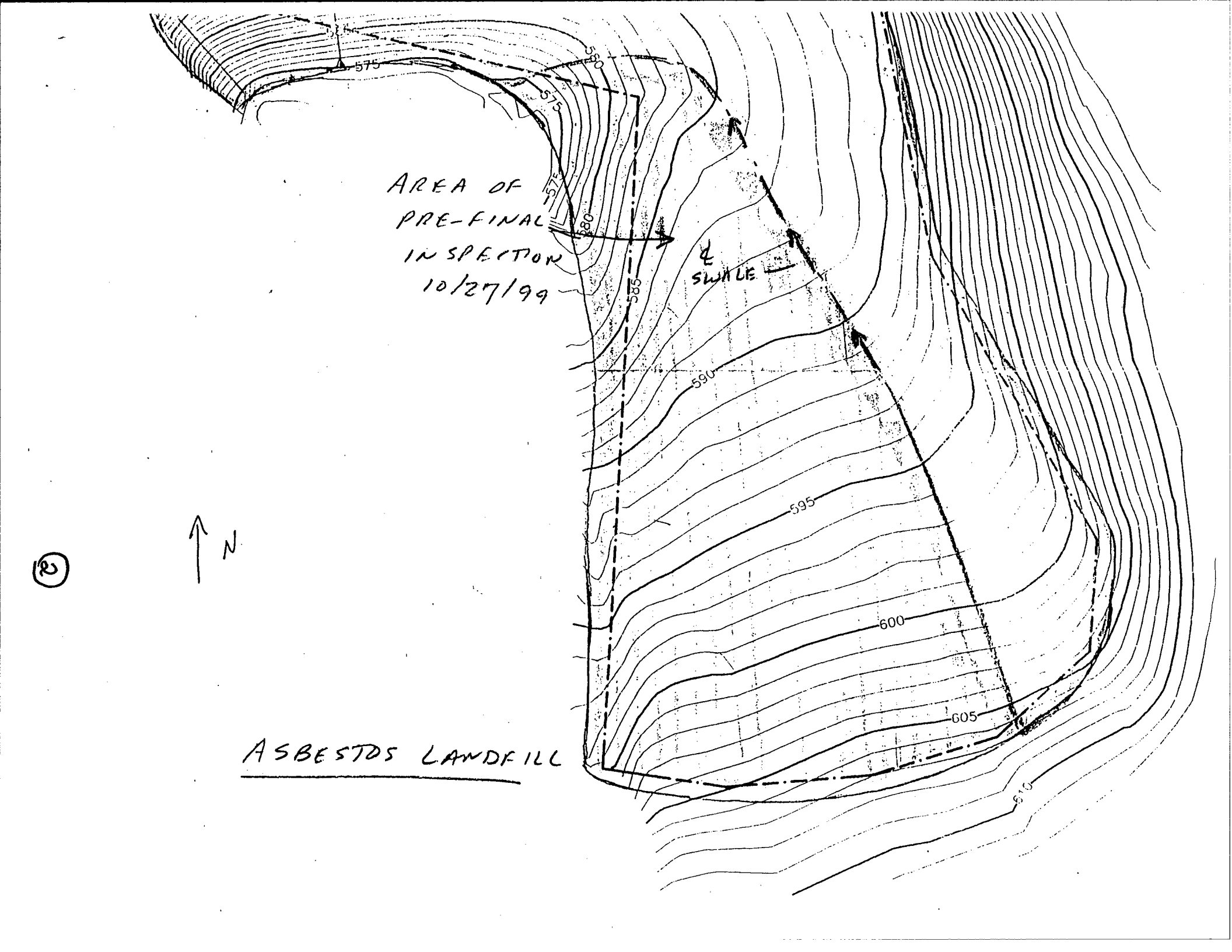
Additional Observations: (Use additional sheets as needed)

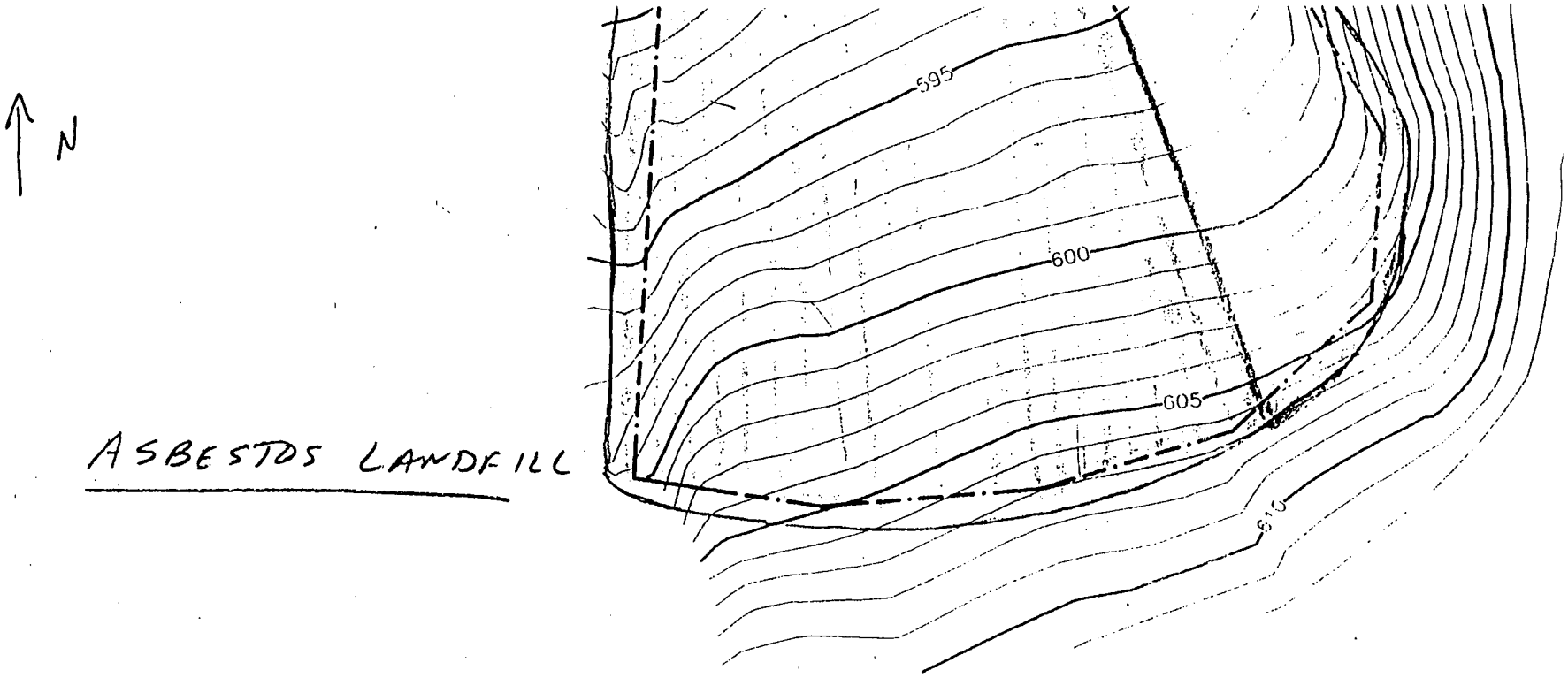
1) Subject to rework of steep slopes in NW section
x of landfill (Refer to sketch) — must be
x reshaped to be no steeper than 3:1
2) Subject to final topo

Byron D. Best
QA Representative

Richard J. Wheeler
QC Representative 10/22/99


610
605
600
595
10/22/99
590
585
580
575
575
580
585
AREA OF
PRE-FINAL
INSPECTION
10/27/99
℄
SWALE


AREA OF
PRE-FINAL
INSPECTION
10/27/99
℄
SWALE
575
580
585
590
595
600
605
610
N
ASBESTOS LANDFILL



ASBESTOS LANDFILL

(3)

10247.1

Pre-Final Construction Inspection Checklist

10247 · 1

Site Name: Asbestos Landfill Final Cap Date: 10/27/99

General Work Description: Barrier Soil Placement

Attendees: BYRON BEST

RICH WHEELER

Punchlist Items or Observations: (Use additional sheets as needed)

Inspected Item	Complete? QC	QA
1. Barrier soil placed to established grades and elevations.	☑	☑
2. Placed in lifts with a maximum thickness of 10 inches in-place; compacted soil per lift for a total of 20 inches of in-place, compacted soil.	☑	☑
3. Lifts constructed in such a manner that provides for interface bonding (e.g., scarifying or use of sheep's foot roller)	☑	☑
4. Testing complete and acceptable.	☑	☑
	☐	☐

Area(s) inspected:

See attached drawing for barrier soil areas to be approved.

Additional Observations: (Use additional sheets as needed)

1 SCARIFY SOIL PRIOR TO PLACEMENT OF TOPSOIL

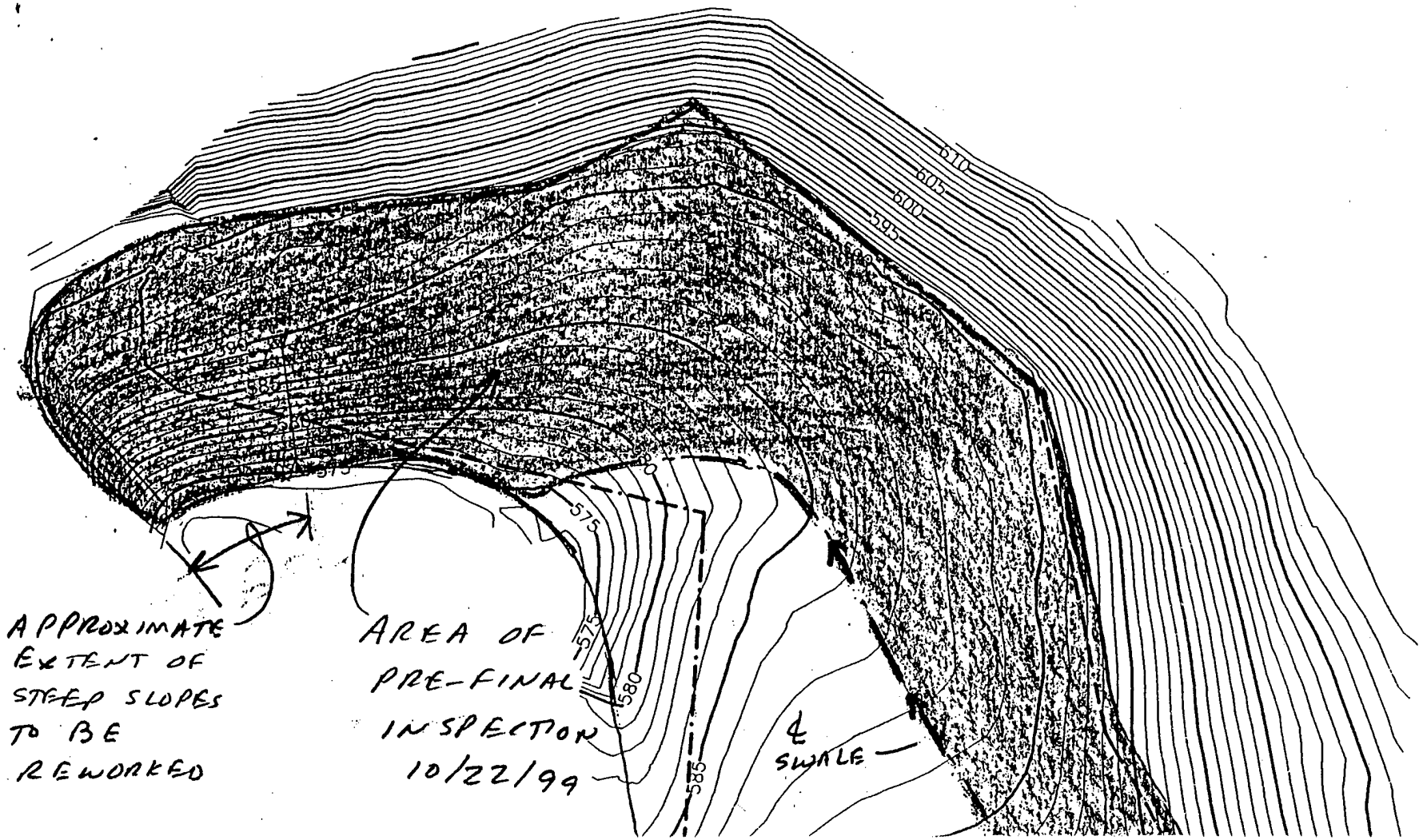
2 SUBJECT TO FINAL TOPO

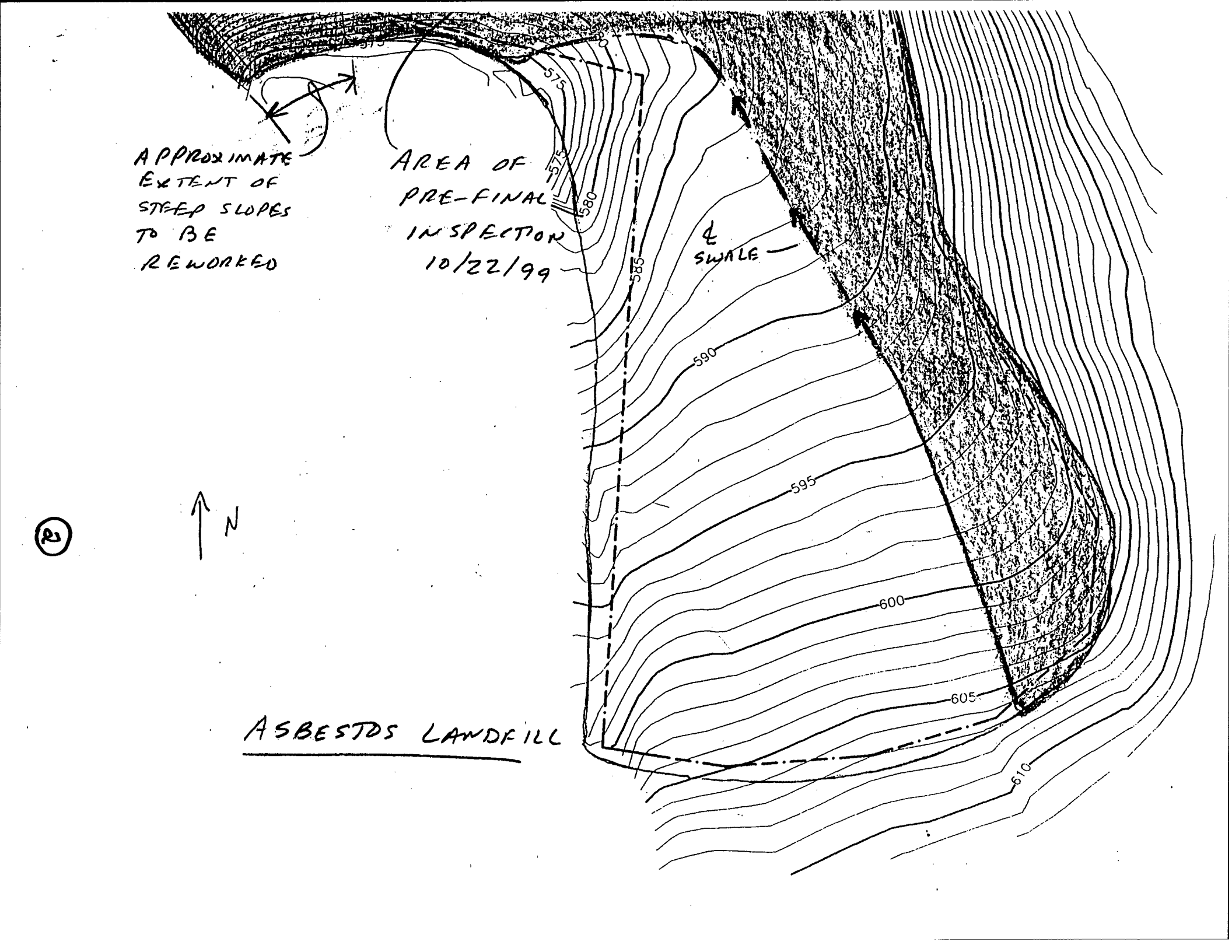
3 SUBJECT TO SUCCESSFUL COMPLETION OF LIFT

4 INTERFACE BONDING TEST NEAR SOUTH END OF BARRIER SOIL PLACEMENT

Byron Best
QA Representative

Richard J Wheeler
QC Representative


610
605
600
595
590
585
580
575
570
565
APPROXIMATE EXTENT OF STEEP SLOPES TO BE REWORKED
AREA OF PRE-FINAL INSPECTION 10/22/99
℄ SWALE


APPROXIMATE EXTENT OF STEEP SLOPES TO BE REWORKED
AREA OF PRE-FINAL INSPECTION 10/22/99
℄ SWALE
575
580
585
590
595
600
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610
N
ASBESTOS LANDFILL

(2)

ASBESTOS LANDFILL

(3)

Pre-Final Construction Inspection Checklist

Site Name: Asbestos Landfill Date: 10/28/99

General Work Description: Construction of Asbestos Landfill Final Cap. Completion of Work.

Attendees: Dave Hopkins, Byron Best, URS

Dave Burns, MDEP, Rich Wheeler, BEI

Ed Trujillo, BEI, Lou Pizzuti

Carl Dirnbauer, BEI

Punchlist Items or Observations: (Use additional sheets as needed)

1. Complete Placement of topsoil.
2. Complete pre-final (QA/QC) inspection of topsoil placement,
3. Complete installation of erosion mat in the swale.
4. Seed and mulch areas defined in the work plan.
5. Place signs around the perimeter of the landfill.
6. Complete as-built topographic survey of completed landfill.
7. Remove rocks protruding more than 3 inches above general surface of topsoil.
8. Roll the top surface of the topsoil after seeding and mulching if surface is not too soft.
9. Block two of the three access roads. The center (gated) road shall remain open/accessible.
10. Leave silt fence in place.
11. Do not install seed on frozen ground.
12. Use the P300 erosion mat as specified.
13. Increase the annual rye seed mix to 75# per acre on the 2:1 slopes.

Byron Best
QA Representative

Richard O Wheeler
QC Representative 11/4/99

10251 · 1

Pre-Final Construction Inspection Checklist

Site Name: Asbestos Landfill Final Cap Date: 10/29/99

General Work Description: Topsoil Placement

Attendees: BYRON BEST

RICH Wheelen

Punchlist Items or Observations: (Use additional sheets as needed)

Inspected Item	Complete? QC	QA
1. Placed and lightly compacted in a 4-inch lift over the barrier soil.	✓	✓
2. Fertilized at the rate of 600 lb/acre of ~~10-10-10 (after 9/15)~~ 18-24-12	✓	✓
3. Amended with limestone at the rate of 2000 lb/acre.	✓	✓
4. Seeded using the USFWS Conservation Mix.	✓	✓
5. Mulched with straw or hay at the rate of 2 bales (minimum 100 lb) per 1000 ft.	✓	✓

Area(s) inspected: Entire Landfill

Additional Observations: (Use additional sheets as needed)

1 subject to final topo

2 Some Rut Repair Needed

3 A few large rocks on the 2:1 slopes need to

4 be removed when surface can be traversed

Byron D Best
QA Representative

Richard D Wheelen
QC Representative
10/29/99

Final Construction Inspection Checklist

Site Name: Asbestos Landfill Date: 18 Nov 99

General Work Description: Construction of Asbestos Landfill Final Cap. Completion of work.

Attendees: John Mueller, AFCEE
Byron Best, URS
Joe Duncan, Bechtel

Punchlist Items or Observations from Pre-Final (Use additional sheets as needed.)

Item No.	Description	Bechtel QC	Air Force QA	Date	
1	Complete placement of topsoil	JWD		19 Nov	
2	Complete pre-final (QA/QC) inspection of topsoil placement	JWD		19 Nov	
3	Complete installation of erosion mat in the swale	JWD		19 Nov	
4	Seed and mulch areas defined in the work plan.	JWD		19 Nov	
5	Place signs around the perimeter of the landfill.				SEE NOTE #5
6	Complete as-built topographic survey of the completed landfill.				SEE NOTE #2
7	Remove rocks protruding more than 3 inches above general surface of the topsoil.	JWD		19 Nov	
8	Roll the top surface of the topsoil after seeding and mulching if the surface is not too soft.				SEE NOTE #3
9	Block two of the three access roads. The center (gated) road shall remail open/accessable.	JWD		19 Nov	
10	Reinforce silt fence with hay bales. At the end of the swale, remove the silt fence and place in a semi-circle a short distance into the drainage basin. Place hay bales on the north side of the swale at the curve.	JWD		19 Nov	
11	Do no install seed on frozen ground.	N/A - SEE ITEM #4 JD		19 Nov	
12	Use the P-300 erosion mat as specified.	N/A - SEE ITEM #3 JD		19 Nov	
13	Increase the annual rye mix to 75 lb./acre on the 2:1 slopes	N/A - SEE ITEM #4 JD		19 Nov	
14	CONSTRUCT DRAINAGE SWALE PER CLOSURE PLAN				SEE NOTE #1

Additional Observations

1. Bechtel will provide an engineering evaluation of the wetted perimeter of the erosion mat placement in the drainage swale v.s. the design drawing
2. Bechtel will provide a copy of the final topo map to the AF
3. The topsoil will be rolled in spring 2000
4. Bechtel will provide keys to the landfill gate to the AF — GIVEN TO D. HOPKINS 19 NOV 99
5. PLACE MISSING SIGNS ON INSTALLED POSTS AT THE LANDFILL. (6-B SIGNS) JWD

QA Representative

QC Representative

APPENDIX D

REQUEST FOR INFORMATION

REQUEST FOR INFORMATION
(RFI)

PROJECT NAME: AFCEE - Loring

JOB NO. 22784-006 RFI NO: 336

LOCATION: Limestone, Maine PAGE 1 OF 1 + attach.

TO: John Mueller OF: AFCEE/ERB-L

REFERENCE DRAWING: 007-DD-002	SPECIFICATION: 007-SP000-001 Technical Specification for Earthwork, Asbestos Landfill, Final Cap

LOCATION: Asbestos Landfill

INFORMATION REQUESTED: Change the lift thickness for placing common borrow specified in the above referenced spec (Section 3.1B) from 12 inches to 24 inches. Other activities outline on this section (I.e. compaction) will not be impacted by this change.

REASON REQUESTED: This approach/technique is being used at the LF-3 with excellent results.

REQUESTED BY: Santi Sanchez

REPLY REQUIRED BY: 9/13/99

9/9/99 BEI

DATE CONTRACTOR

INFORMATION TO CONTRACTOR

TO: Santi Sanchez	FROM: John Mueller
OF: BEI	OF: AFCEE

REQUESTED INFORMATION:

APPROVED

10/1/99 AFCEE/ERB-L

DATE

CC: Denis St. Peter, Dave Hopkins, Dorothy Allen, Byron Best, Ken Barry, C. Dirnbauer, S. Sanchez, L. Booth, E. Trujillo

nchez, Santiago

rom: dhopkins@afbda1.hq.af.mil
Sent: Friday, September 03, 1999 10:05 AM
To: Trujillo, Ed
Cc: byron_best@urscorp.com; Dirnbauer, Carl; dave.e.burns@state.me.us; John.Mueller@hqafcee.brooks.af.mil; lou.s.pizzuti@state.me.us; rlvaugh@bechtel.com; Sanchez, Santiago
Subject: Asbestos Landfill Common Borrow 24"Lifts

Ed, As a followup up to Bechtel's informal request this am to increase the lift thickness of the common borrow from 12" to 24", I offer the following:

Currently the design calls for the common borrow to be placed in 12" lifts with 4 passes of a vibratory roller for each lift. There is no compaction tests required.

The proposal is to place the common borrow, which is very similar(borrowed from the same general area) to the select bedding gravel being used at LF3, without being screened, in 24" lifts vs 12" lifts. The request is based on the performance being achieved at LF 3 with the 24" lifts.

This proposal is accepted by the Air Force and the MEDEP provided that similar construction techniques(compaction) will be used at the ACM landfill as at LF3.

This proposal is a change to the workplan and should be followed up by an RFI. I will inform URS of this change. DH

REQUEST FOR INFORMATION
(RFI)

PROJECT NAME: AFCEE - Loring

JOB NO. 22784-051 RFI NO: 337

LOCATION: Limestone, Maine PAGE 1 OF 1 + Attach.

TO: John Mueller OF: AFCEE/ERB-L

REFERENCE DRAWING: 007-DD-002 Rev 2	SPECIFICATION: N/A

LOCATION: Asbestos Landfill

INFORMATION REQUESTED:

Request concurrence on the revised boundaries of the asbestos waste at the Asbestos Landfill. Please see attached drawing 007-DD-002 Revision 2.

REASON REQUESTED:

The boundaries were revised based on field conditions and will minimize the amount of common borrow to be placed.

REQUESTED BY: Carl Dirnbauer

REPLY REQUIRED BY: 9/13/99

9/9/1999 DATE

BEI CONTRACTOR

INFORMATION TO CONTRACTOR

TO: Carl Dirnbauer	FROM: John Mueller
OF: BEI	OF: AFCEE

REQUESTED INFORMATION:

APPROVED PER ATTACHED E-MAIL WITH NOTED EXCEPTIONS

10/1/99 DATE

AFCEE/ERB-L

CC: Dave Hopkins, Dorothy Allen, Byron Best, Ken Barry, Ed Trujillo, Carl Dirnbauer, Larry Booth, Eric Berglund, Santi Sanchez, Bob Vaughan

Dirnbauer, Carl

From: dhopkins@afbda1.hq.af.mil
Sent: Monday, September 13, 1999 8:02 AM
To: John.Mueller@hqafcee.brooks.af.mil
Cc: Dirnbauer, Carl; Trujillo, Ed; Patterson, Rayford; Barry, Ken
Subject: RFI 337- Asbestos Landfill

John, Recommend approval of this RFI with the following exception.
The limits of waste shown on the plan view of the drawing should represent what was staked in the field. However, the waste limits shown(flag symbol) in the sections A,C,D, and E do not match up with the plan view. The final drawing should be corrected.
I would recommend we commence the cap using the staked locations in the field while the drawing is being corrected. I wouold like to send a corrected drawing to DEP asap. DH

9941.2

REQUEST FOR INFORMATION (RFI)

PROJECT NAME: AFCEE - Loring

JOB NO. 22784-006 RFI NO: 338

LOCATION: Limestone, Maine PAGE 1 OF 1 + attach.

TO: John Mueller OF: AFCEE/ERB-L

REFERENCE DRAWING: 007-DD-002	SPECIFICATION: 000-SP000-001 Standard Specification for for Turf Establishment

LOCATION: Asbestos Landfill

INFORMATION REQUESTED: Allow the use of unscreened topsoil to cover the surface of the asbestos landfill.

REASON REQUESTED: To avoid extra screening costs.

REQUESTED BY: Santi Sanchez

REPLY REQUIRED BY: 9/27/99

9/23/1999 DATE

BEI CONTRACTOR

INFORMATION TO CONTRACTOR

TO: Santi Sanchez	FROM: John Mueller
OF: BEI	OF: AFCEE

REQUESTED INFORMATION:

APPROVED PER ATTACHED E-MAIL.

10/1/99 DATE

AFCEE/ERB-L

CC: Denis St. Peter, Dave Hopkins, Dorothy Allen, Byron Best, Ken Barry, C. Dirnbauer, S. Sanchez, L. Booth, E. Trujillo

anchez, Santiago

From: Dirnbauer, Carl
Sent: Thursday, September 23, 1999 3:16 PM
To: Sanchez, Santiago
Cc: Trujillo, Ed
Subject: FW: Topsoil For Asbestos Landfill

Santi:

Please prep an RFI to allow the use of unscreened topsoil at the Asbestos Landfill. Dave has already agreed to the change (see below) but it is a deviation from the work plan (see Section 2.7 (c) of Technical Specification 000-SP-000-001, Turf Establishment), so it should be documented with an RFI.

Thanks

Carl

----Original Message----
From: dhopkins@afbda1.hq.af.mil [SMTP:dhopkins@afbda1.hq.af.mil]
Sent: Monday, August 16, 1999 4:56 PM
To: John.Mueller@hqafcee.brooks.af.mil
Cc: byron_best@urscorp.com; Dirnbauer, Carl; Trujillo, Ed; Patterson, Rayford
Subject: Topsoil For Asbestos Landfill

John, As you know, the Closure Plan said that the topsoil was to come from on base, the tech spec for the landfill said it would come the UTS pile, the tech spec for turf said the topsoil could could come from either onsite or offsite, but if from off site it will be screened to 2"minus. You can see why this was confusing. The proposal was silent on screened vs unscreened. For a Soild Waste cap I expected screened topsoil and would have expected Bechtel to state otherwise. What is planned for LF3? What was in the specs and proposal?

We were told in the prep that if screened it would cost extra. I was to look at the Soderberg pit to see if that unscreened material was ok. It is. Therefore, in the interest of a tight budget, Bechtel should use unscreened topsoil from either the UTS site or Soderberg's pit, compact it as discussed in the prep, and raked to scarify it in prep for the seed. This raking should also remove unacceptable protrusions. The surface should be left in a "mowable" condition with minimal protrusions.This should be a QC item and added to the QC checklist.

In the future, I would appeciate being informed of decisions that I should be prepared to make in a meeting before the meeting. Thanx DH

REQUEST FOR INFORMATION
(RFI)

PROJECT NAME: AFCEE - Loring

JOB NO. 22784-007 RFI NO: 343

LOCATION: Limestone, Maine PAGE 1 OF 2

TO: John Mueller OF: AFCEE/ERB-L

REFERENCE DRAWING: N/A	SPECIFICATION: 007-SP000-001

LOCATION: Asbestos Landfill

INFORMATION REQUESTED:

See Attached

REASON REQUESTED:

See Attached

REQUESTED BY: Carl Dirnbauer CD

REPLY REQUIRED BY: 10/12/99

10/9/1999 DATE

BEI CONTRACTOR

INFORMATION TO CONTRACTOR

TO: Carl Dirnbauer	FROM: John Mueller
OF: BEI	OF: AFCEE

REQUESTED INFORMATION:

DATE

AFCEE/ERB-L

CC: Dave Hopkins, Dorothy Allen, Byron Best, Ken Barry, Ed Trujillo, Carl Dirnbauer, Larry Booth, Bob Robinson, Santi Sanchez, Bob Vaughan, Rich Wheeler

Information Requested:

Request approval to obtain barrier soil for the asbestos landfill from Soderberg's Sawyer Road borrow pit. The technical specification requirements for this material, including fines content, maximum particle size and geotechnical testing, shall remain the same.

Reason Requested:

Section 2.2 of Technical Specification 007-SP000-001 states that barrier soil for the asbestos landfill will be obtained from ,"a BEI designated borrow pit near the Underground Transformer Site in East Loring." The material from this borrow pit is becoming unsuitable due to a declining fines content and the inability to achieve the desired level of compaction at point of placement.

APPENDIX E

PHOTOGRAPHS

(TO BE PROVIDED LATER)

APPENDIX F

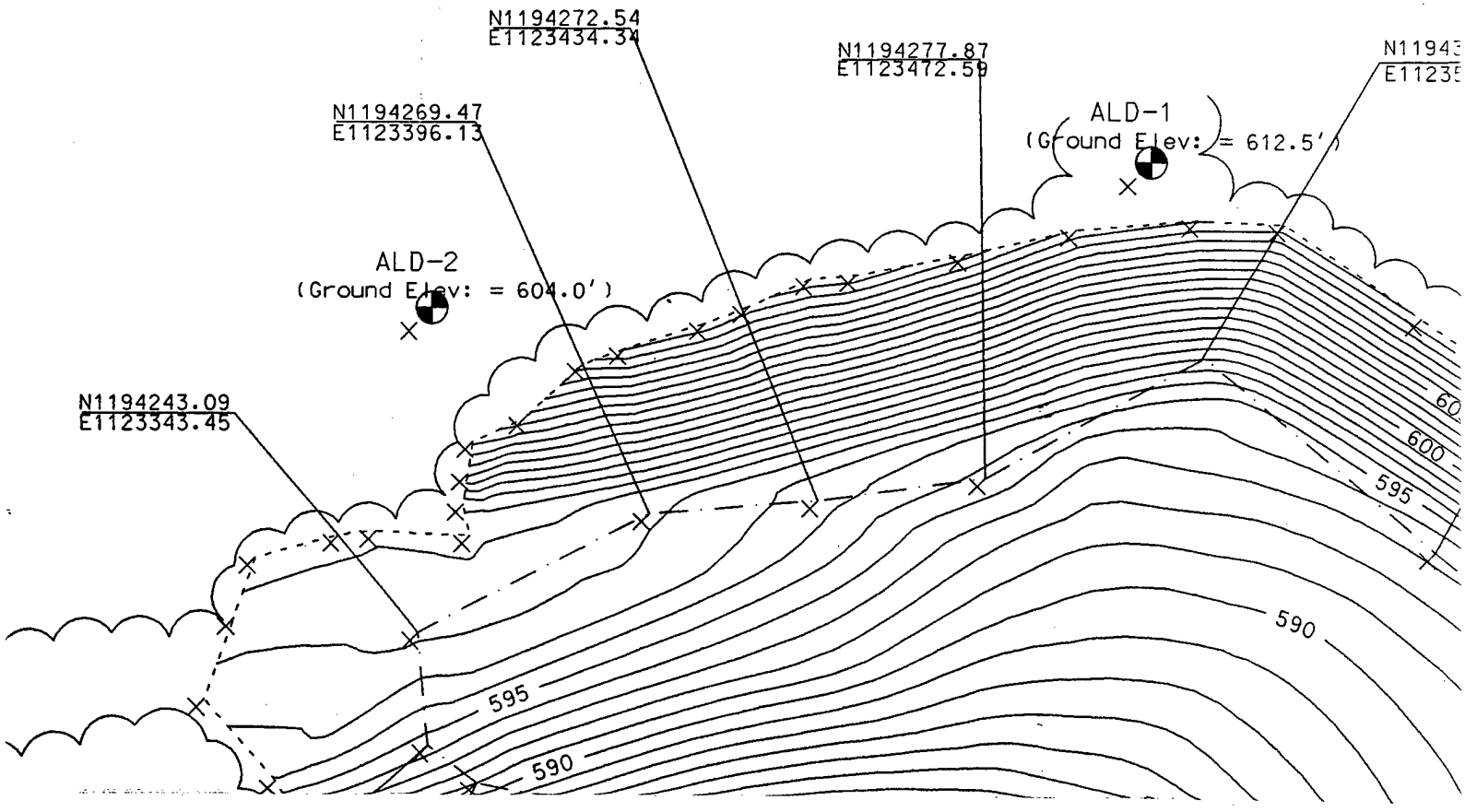
AS-BUILT DRAWINGS

①

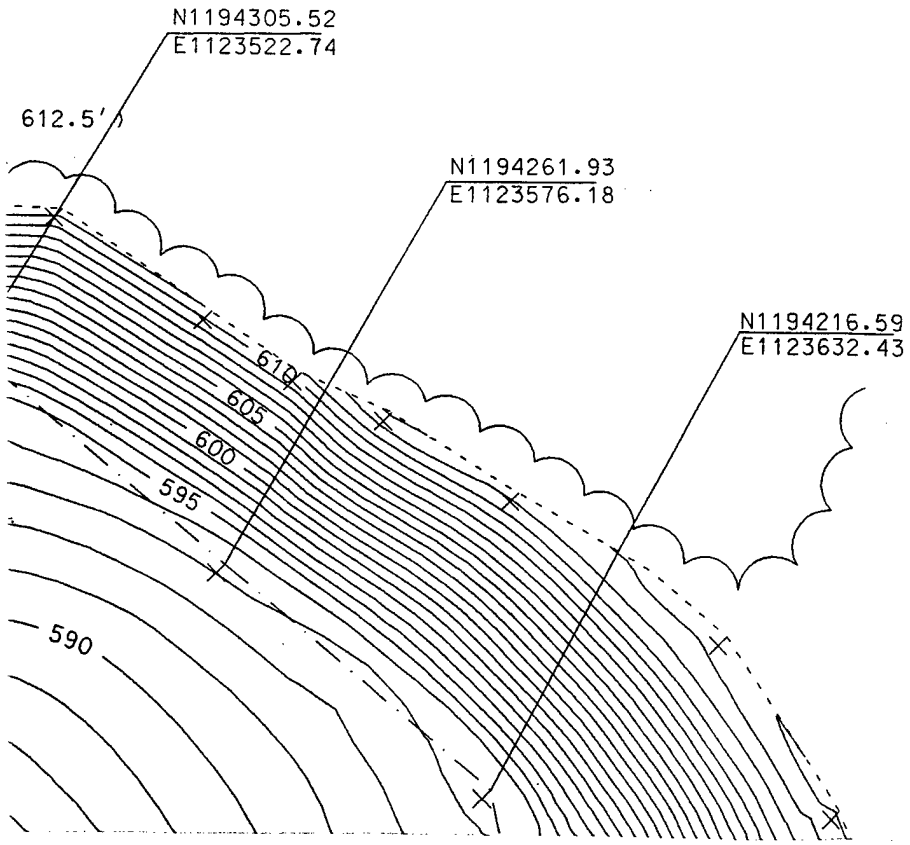
Maine State Grid North

N1194243.09
E1123343.45

DRAF


N1194272.54
E1123434.34
N1194277.87
E1123472.59
N1194269.47
E1123396.13
ALD-1
(Ground Elev: = 612.5')
ALD-2
(Ground Elev: = 604.0')
N1194243.09
E1123343.45
600
595
590
595
590

FT


N1194305.52
E1123522.74
612.5'
N1194261.93
E1123576.18
N1194216.59
E1123632.43
610
605
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As Buil

A

Former L

Caribou, A

Nc

30 0

(5)

As Built Topographic Survey

of

Asbestos Landfill

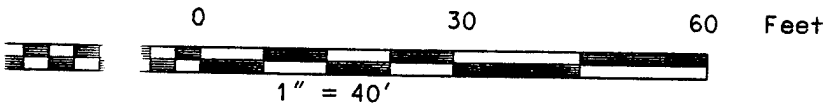
at the

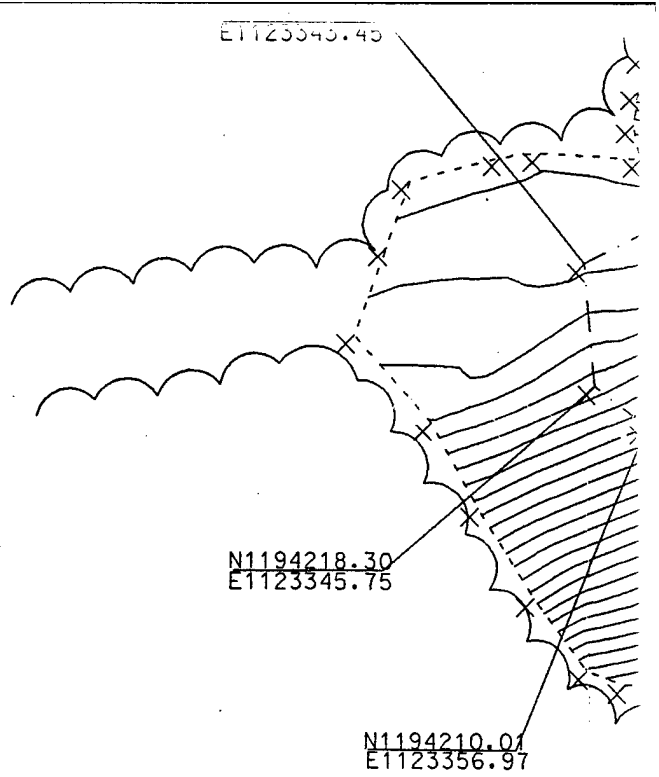
Former Loring Air Force Base

Caribou, Aroostook County, Maine

November 8, 1999

1' contour

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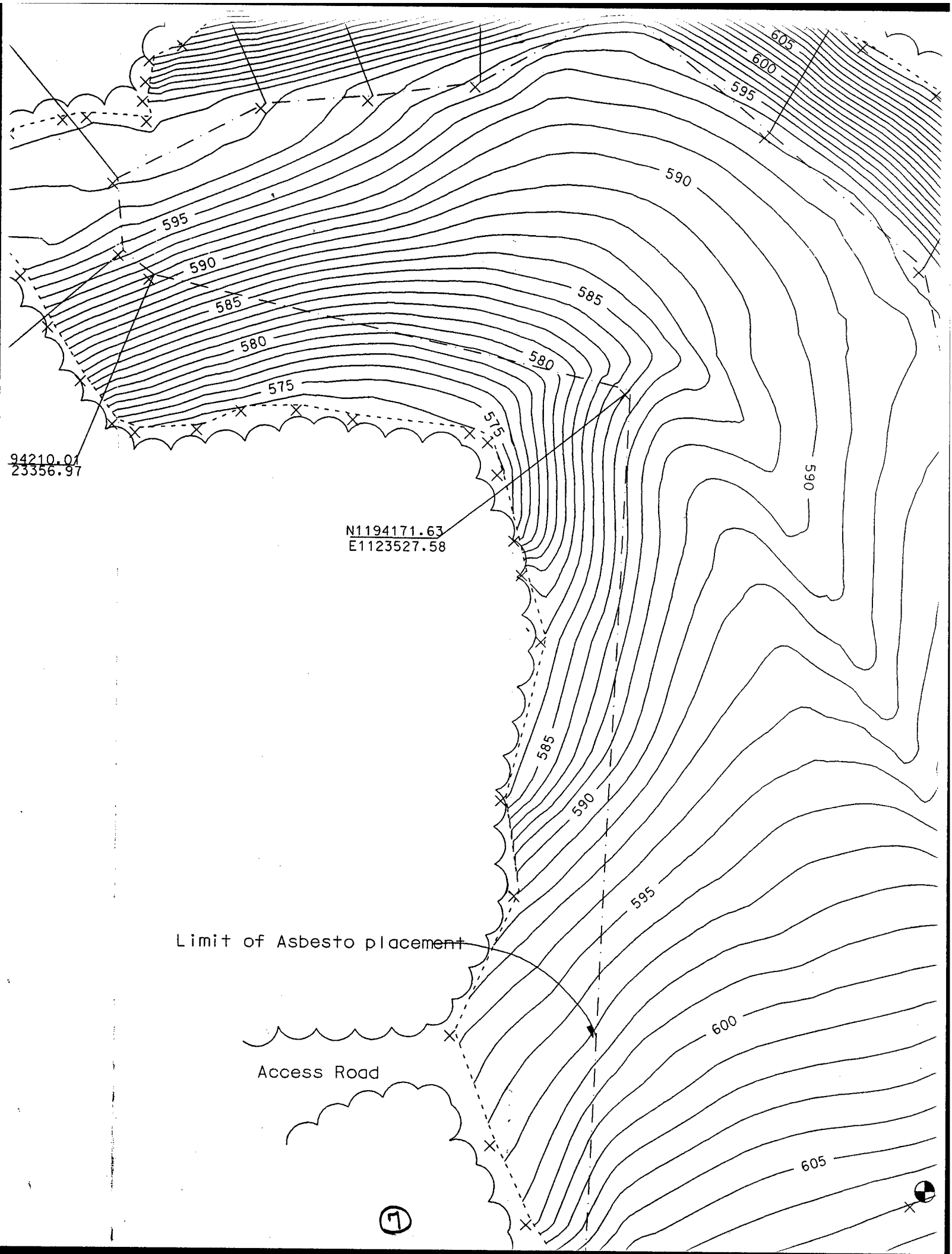
N1194210.01
E1123356.97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575
575
590
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23356.97
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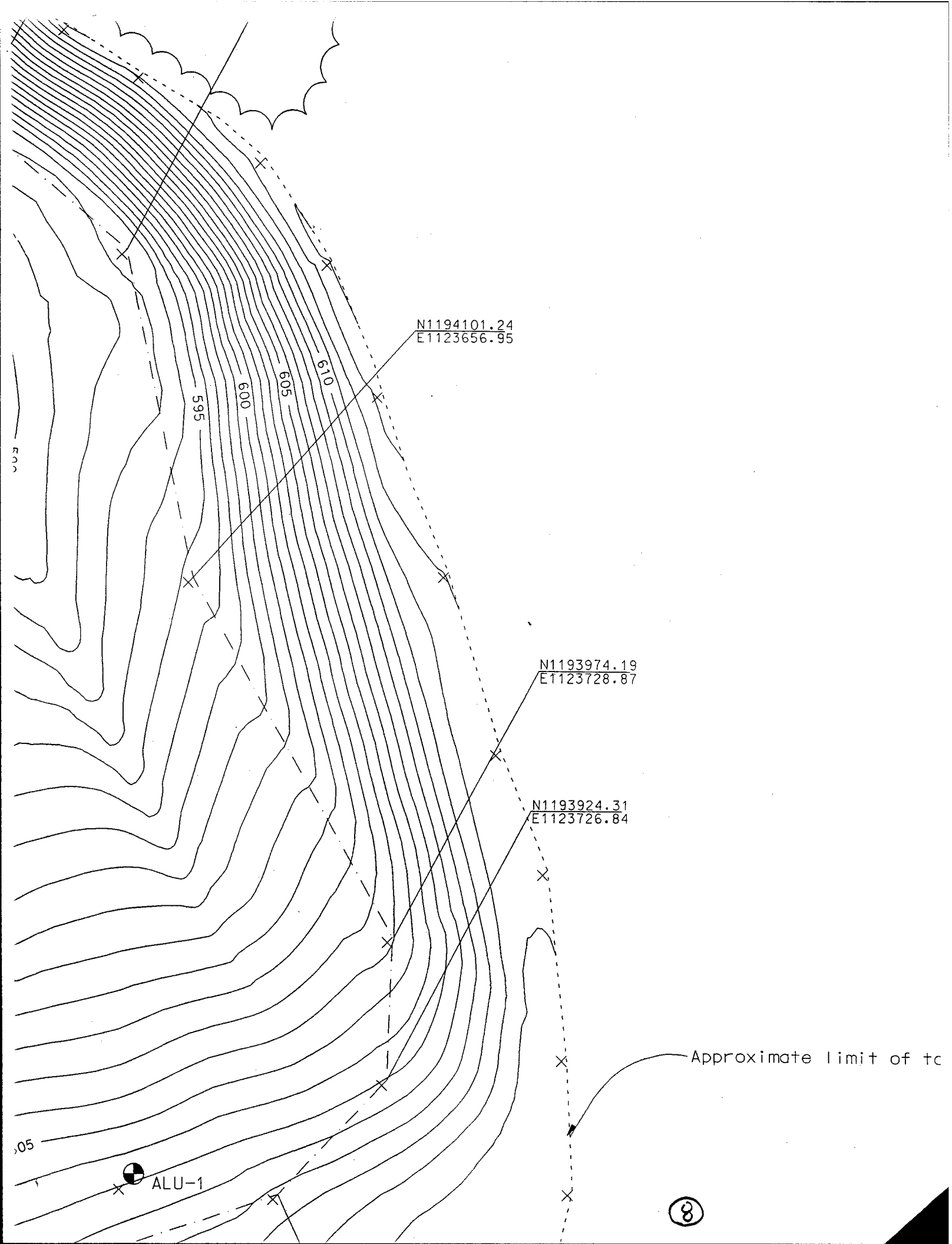
E1123527.58
585
590
595
Limit of Asbesto placement
600
Access Road
605
7


N1194101.24
E1123656.95
595
600
605
610
N1193974.19
E1123728.87
N1193924.31
E1123726.84
Approximate limit of tc
ALU-1

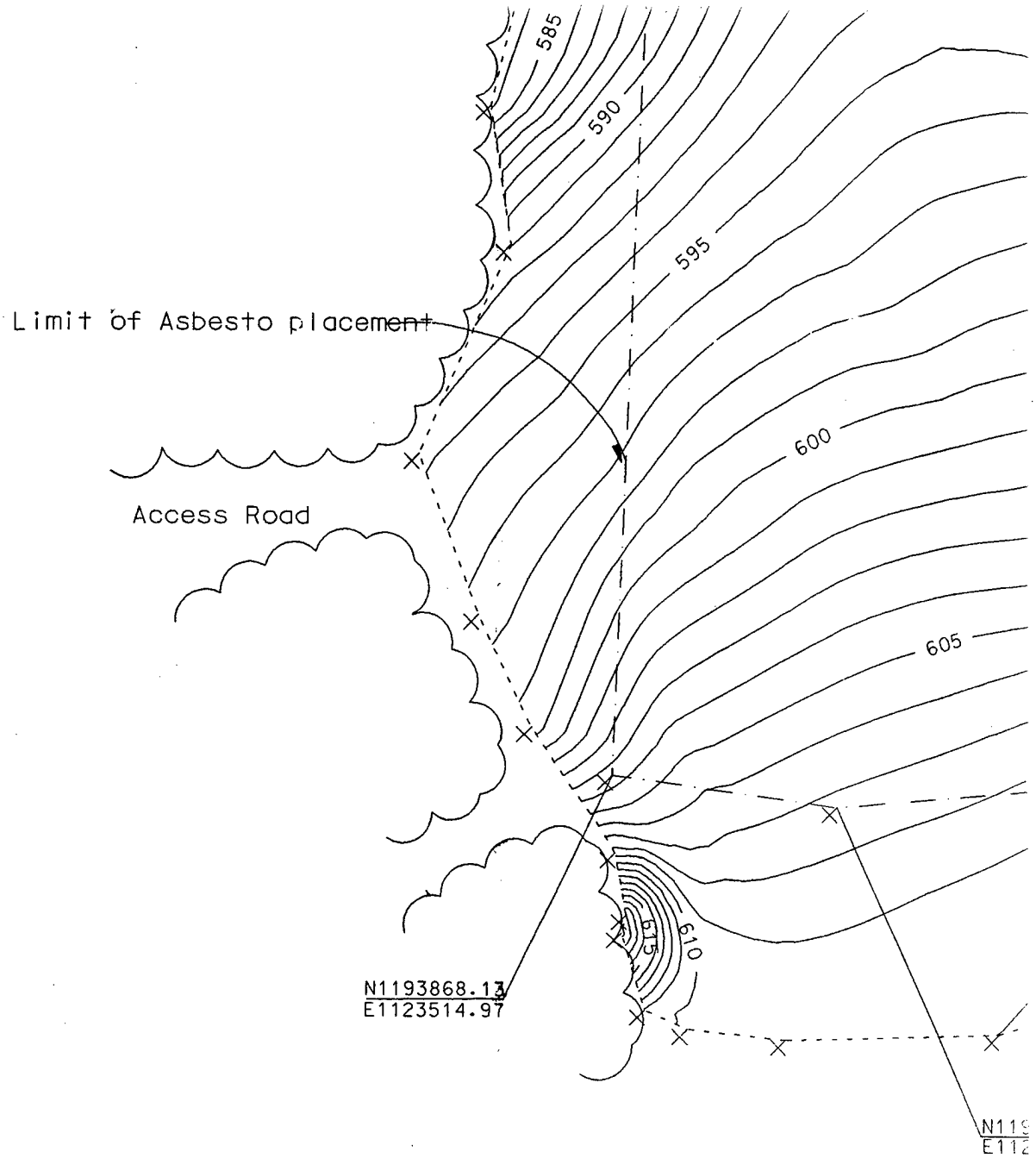
1" = 40'

Note: Coordi tes and elevation
LF21. LF21 i a brass disk in a
monument loca d on the southwes
2. The horiz tal coordinate sy
Coordinate Sy em NAD 1983 and t
is based on t vertical benchmar
on the Former oring Air Force B
the datum is N VD 1929.

limit of topsoil placement

Legend

tes and elevation are referenced to monument
a brass disk in a 12-14 inch concrete
d on the southwesterly side of Landfill
tal coordinate system is Maine State
em NAD 1983 and the vertical datum
vertical benchmarks previously established
oring Air Force Base. It is believed that
VD 1929.


585
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615
Limit of Asbesto placement
Access Road
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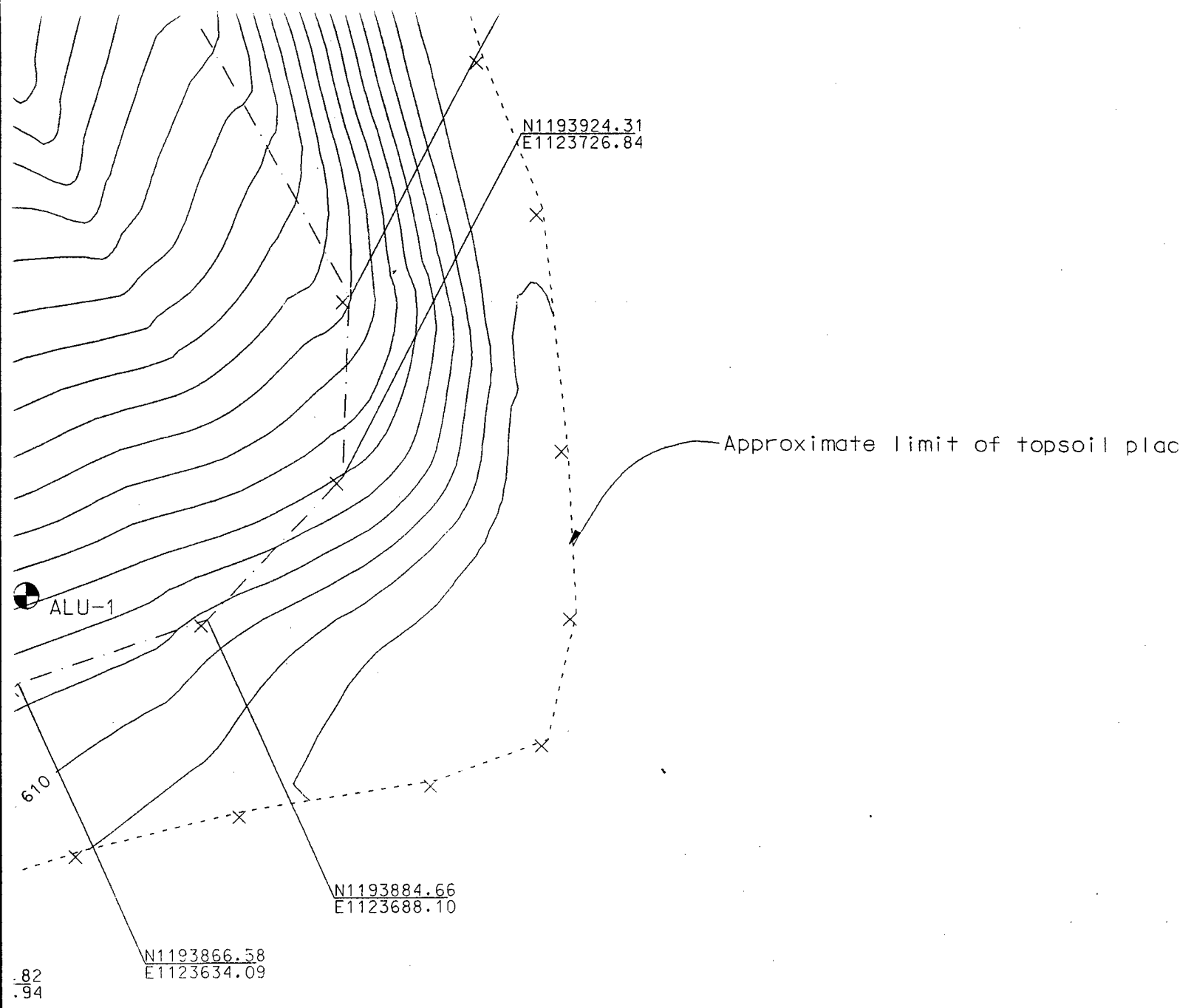

N1193924.31
E1123726.84
Approximate limit of topsoil plac
ALU-1
610
N1193884.66
E1123688.10
N1193866.58
E1123634.09
.82
.94

)f topsoil placement

Legend:

Monit

Edge

Dood

7 F

C

Legend:

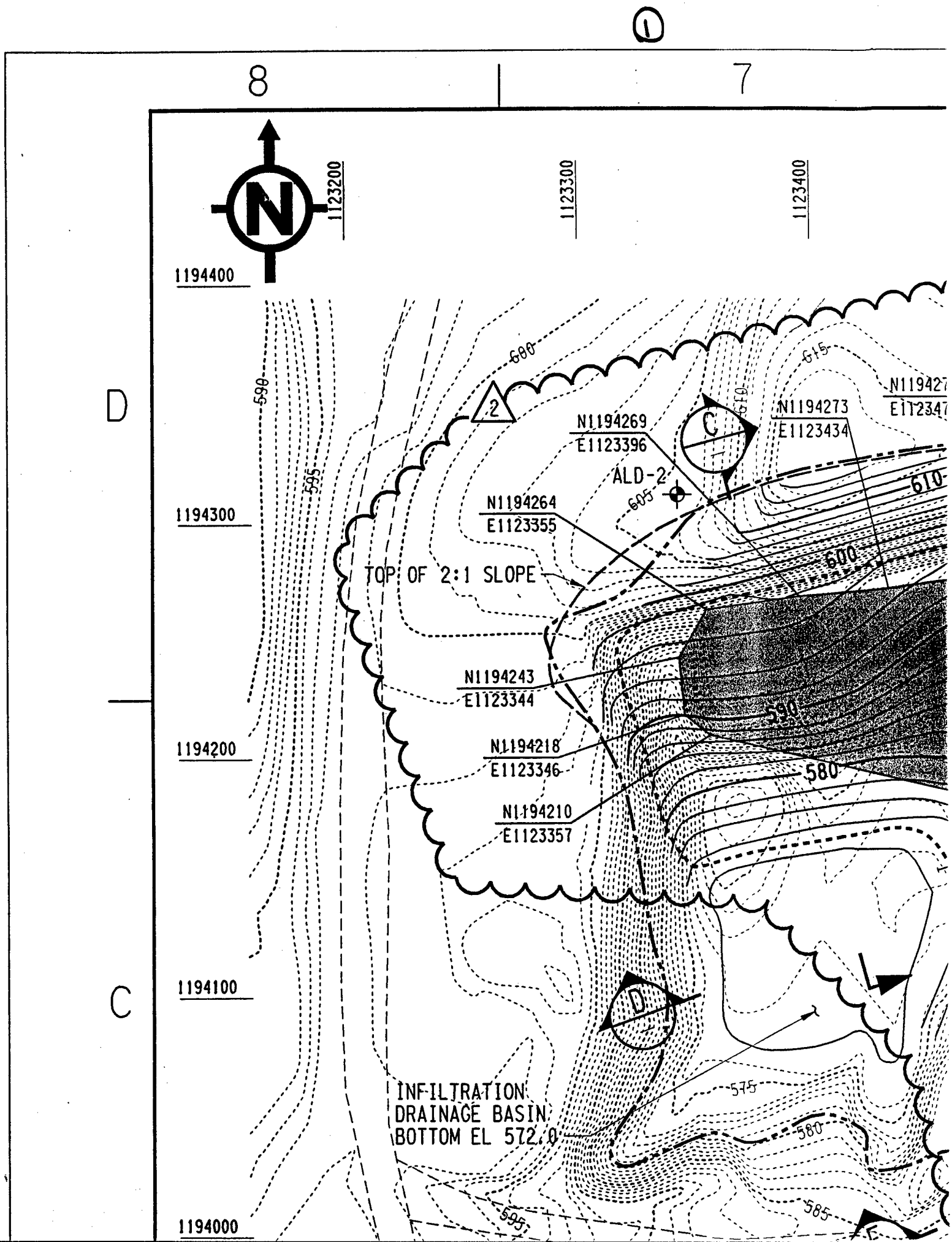
Monitoring well

Edge of forested area

Doody, Blackstone & Bubar
Land Surveying
7 Hatch Drive, Suite 260
Caribou, Maine 04736

ablfinal.dwg

o: \22784\007\ablftopo.dgn Nov. 23, 1999 09:03:37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1123200
1123300
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1194400
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1194200
1194100
1194000
D
C
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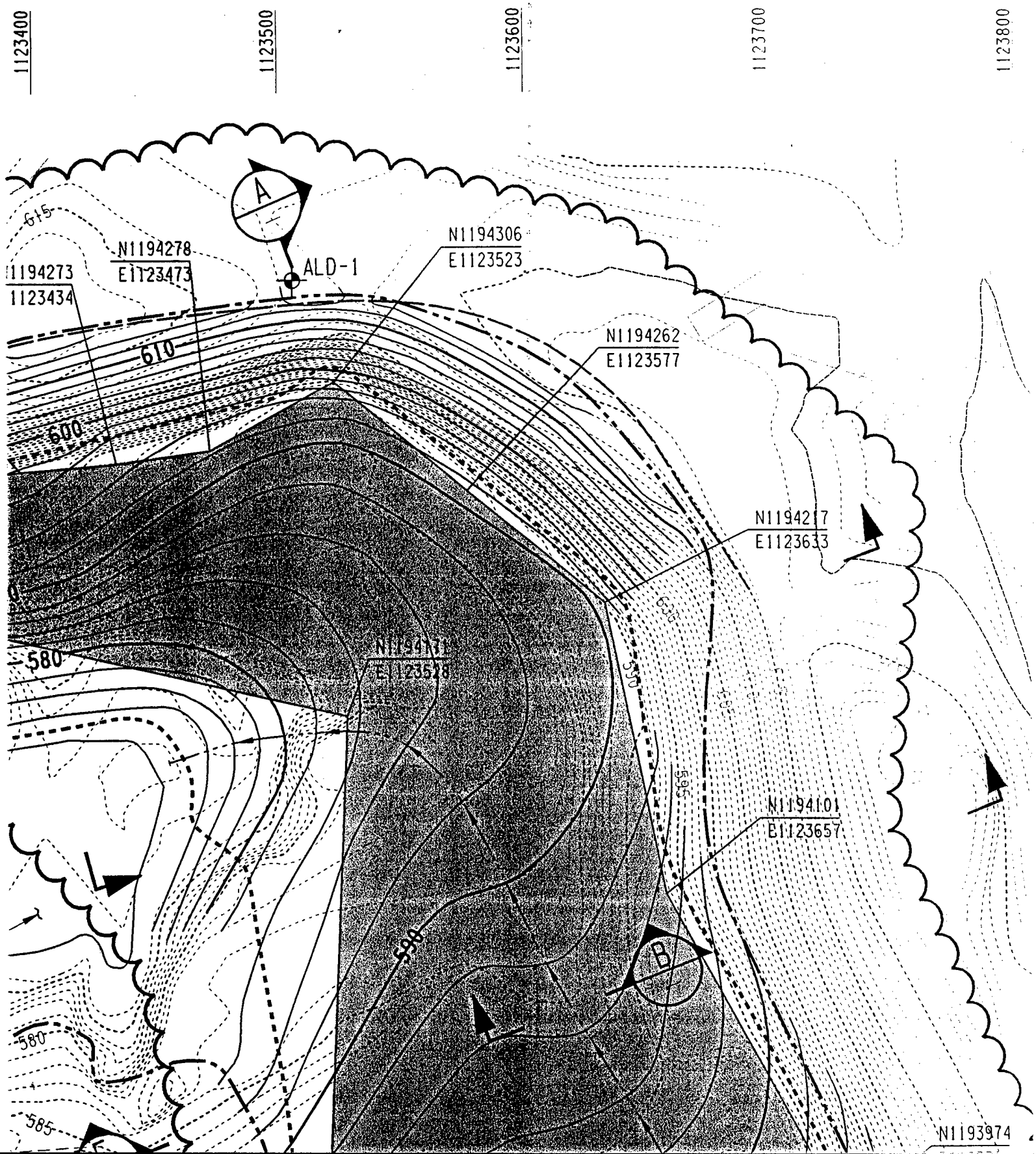
610
615
575
580
585
2
C
D
ALD-2
N1194269
E1123396
N1194273
E1123434
N1194264
E1123355
N1194243
E1123344
N1194218
E1123346
N1194210
E1123357
TOP OF 2:1 SLOPE
INFILTRATION
DRAINAGE BASIN
BOTTOM EL 572.0


6
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1123500
1123600
1123700
1123800
A
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ALD-1
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1123434
N1194306
E1123523
N1194262
E1123577
N1194217
E1123633
N1194171
E1123528
N1194101
E1123657
N1193974
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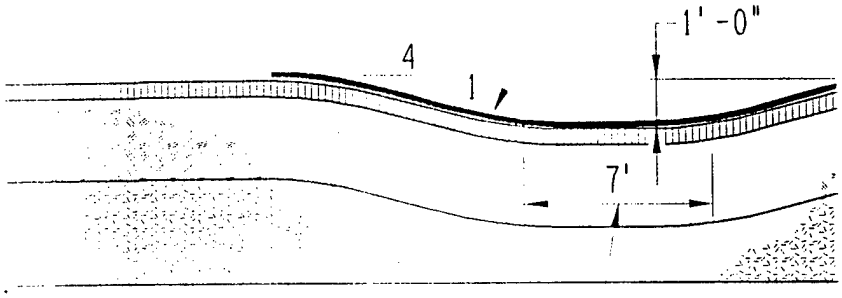
(3)

1123800

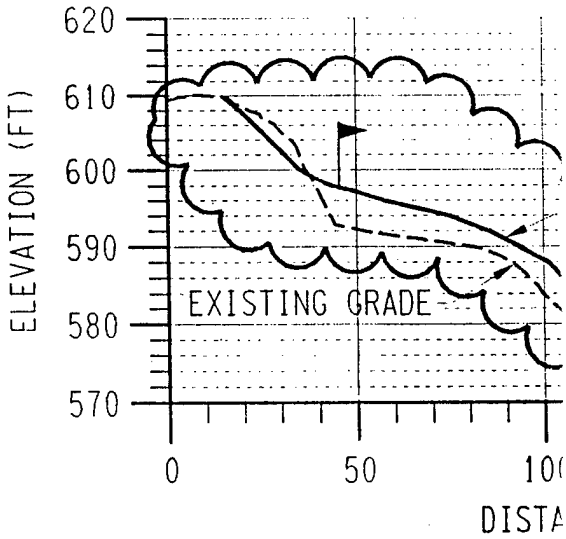
TEMPORARY E
(SEE NOTE 8



SWALE BOTTC
9 FT BELOW

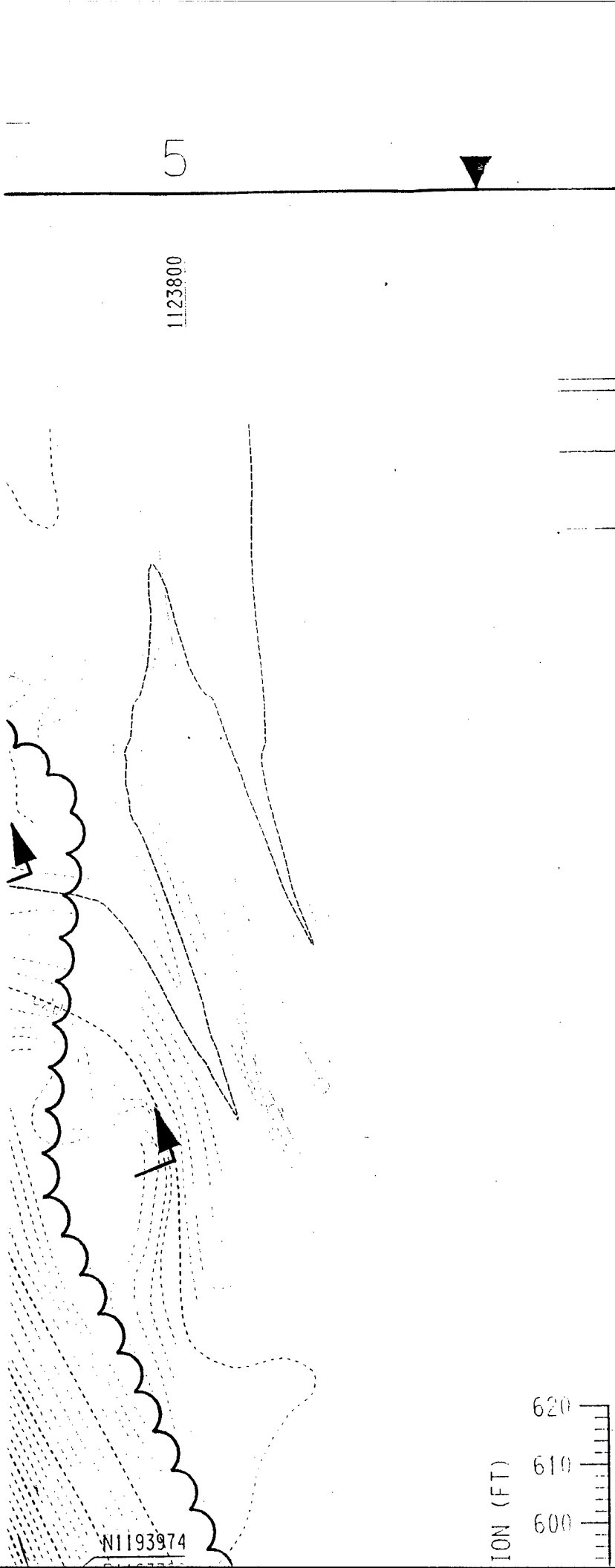
SECTION

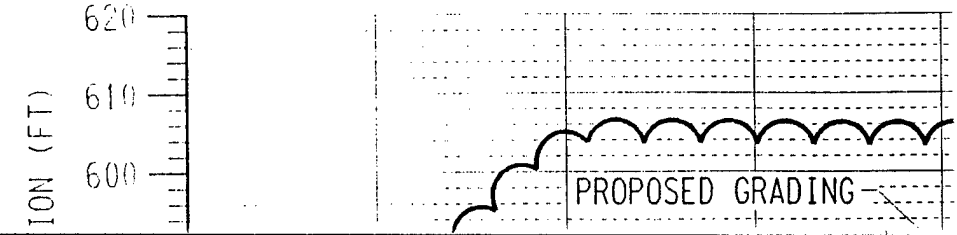
NTS



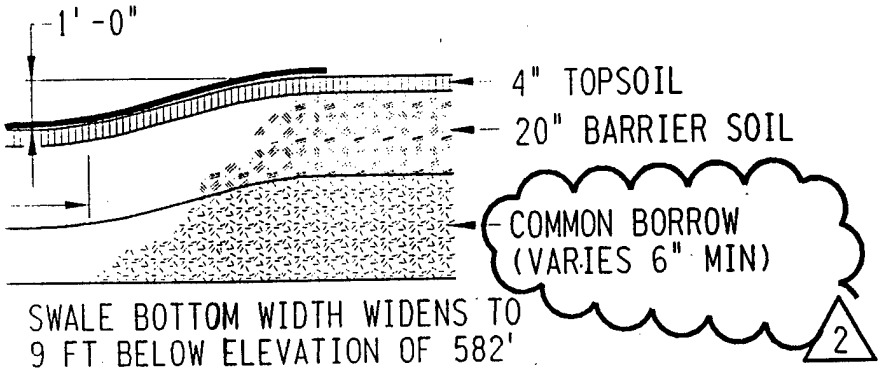
SECTION

HORZ: 1"=50'
VERT: 1"=25'



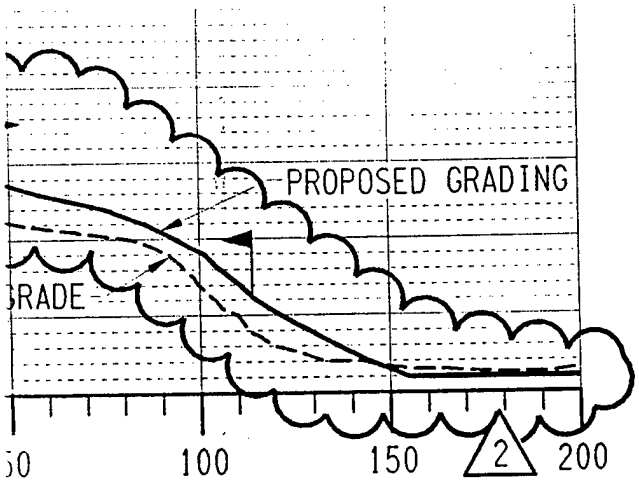


TEMPORARY EROSION CONTROL MAT
(SEE NOTE 8)

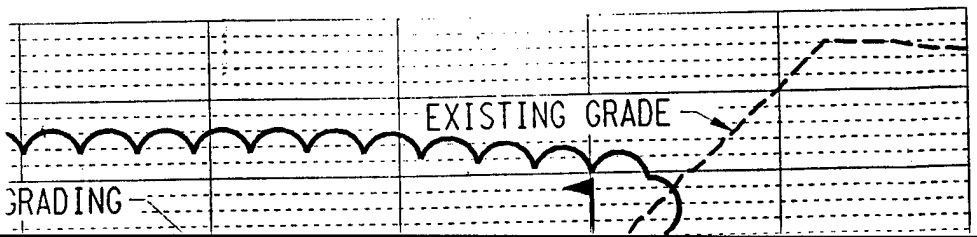


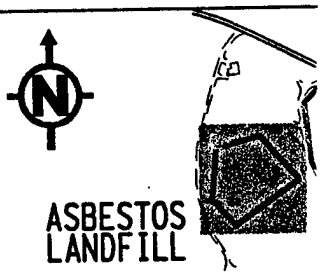
SWALE BOTTOM WIDTH WIDENS TO
9 FT BELOW ELEVATION OF 582'

ECTION B
—
'S



ECTION C
—
ORZ: 1"=50'
ERT: 1"=25'





1. COMMON BORROW SHA
SUBGRADE (BELOW T
DRAINAGE PURPOSES
A GRADATION SPECI
ON-SITE BORROW SC

2. BARRIER SOIL SHAL
THE HORIZONTAL E>
BOUNDARY SURVEY.
SURVEYED PRIOR TC

3. FINISH GRADES OF
MAX. OF 33%.

4. ALL WORK SHALL BI
22784-051-SC-121

5. SLOPE OF DRAINAGI

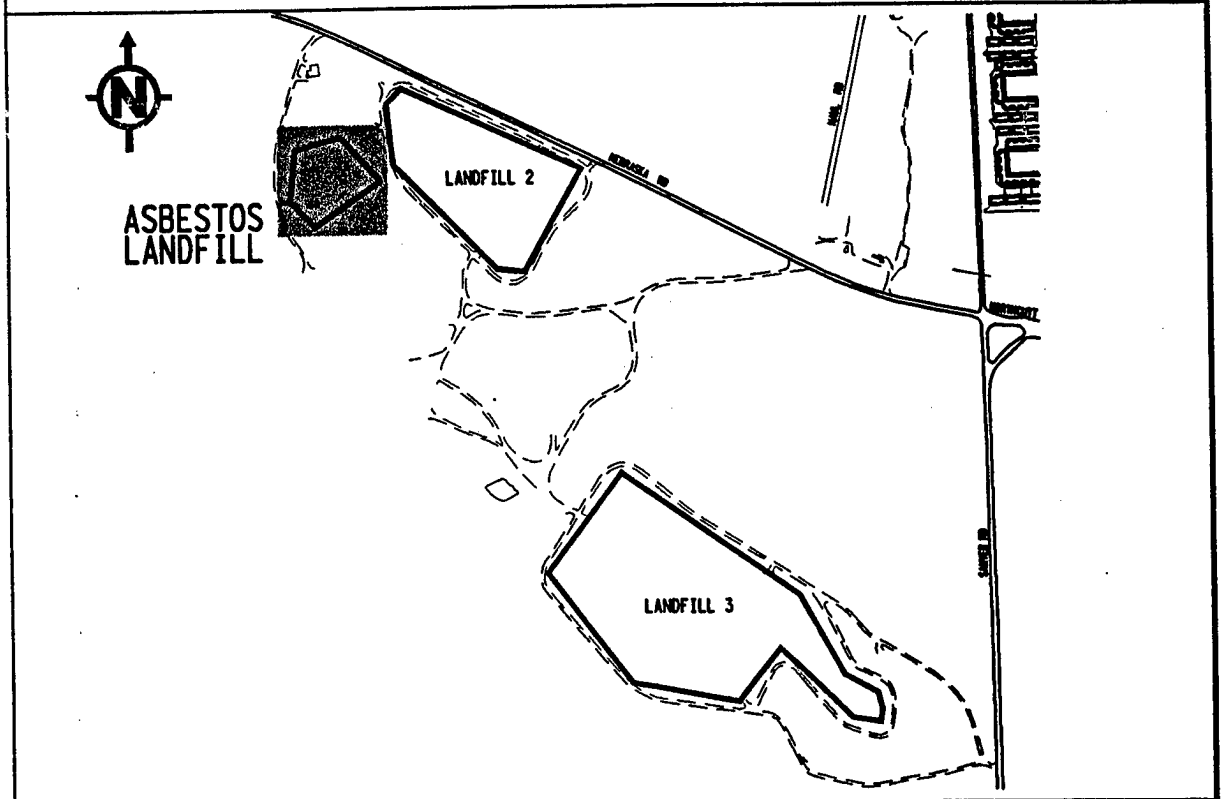
6. BARRIER SOIL SHAI
APPROPRIATE METH
TOP SOIL.

7. THE EXISTING GRA
CAP SHALL BE RE-
SLOPE OF 2H:1V.

8. USE NORTH AMERIC
CONTROL MAT BETW

2 | 1

KEY PLAN (NTS)



D

NOTES

1. COMMON BORROW SHALL BE UTILIZED AS NEEDED TO SHAPE THE SUBGRADE (BELOW THE BARRIER SOIL LAYER) FOR SLOPING AND DRAINAGE PURPOSES. COMMON BORROW IS NOT REQUIRED TO MEET A GRADATION SPECIFICATION AND SHALL BE OBTAINED FROM AN ON-SITE BORROW SOURCE.

2. BARRIER SOIL SHALL BE PLACED TO THE EXISTING GRADE BEYOND THE HORIZONTAL EXTENT OF ACM PLACEMENT AS DEFINED BY THE ACM BOUNDARY SURVEY. LIMITS OF FINAL ACM PLACEMENT SHALL BE CIVIL SURVEYED PRIOR TO PLACEMENT OF FINAL CAP.

3. FINISH GRADES OF THE CAP SHALL BE A MINIMUM OF 6% AND MAX. OF 33%.

4. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH SUBCONTRACT 22784-051-SC-121.

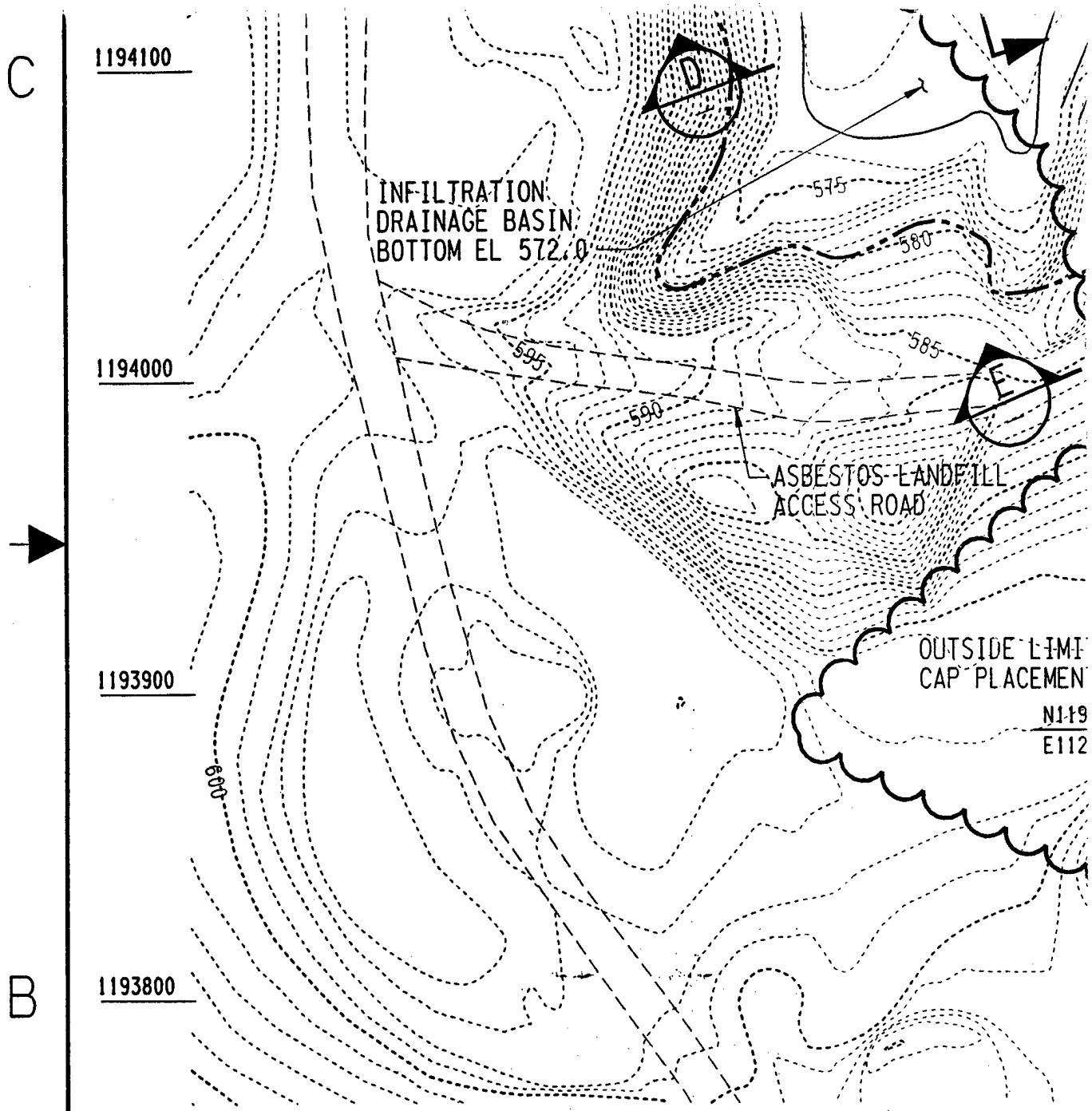
C

5. SLOPE OF DRAINAGE SWALE SHALL BE 2% TO 8% ABOVE ELEVATION 580.

6. BARRIER SOIL SHALL BE LOOSENED (USING A DISC OR OTHER APPROPRIATE METHOD) TO A DEPTH OF 2" PRIOR TO PLACEMENT OF TOP SOIL.

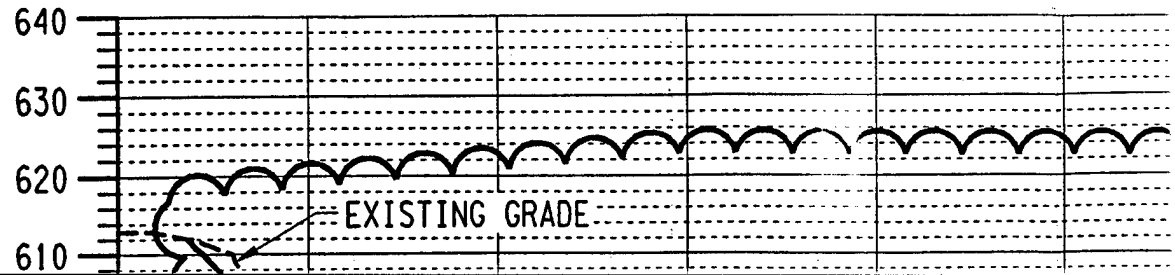
7. THE EXISTING GRADE EXTENDING BEYOND THE LIMITS OF THE FINAL CAP SHALL BE RE-GRADED WHERE NECESSARY TO ASSURE A MAXIMUM SLOPE OF 2H:1V.

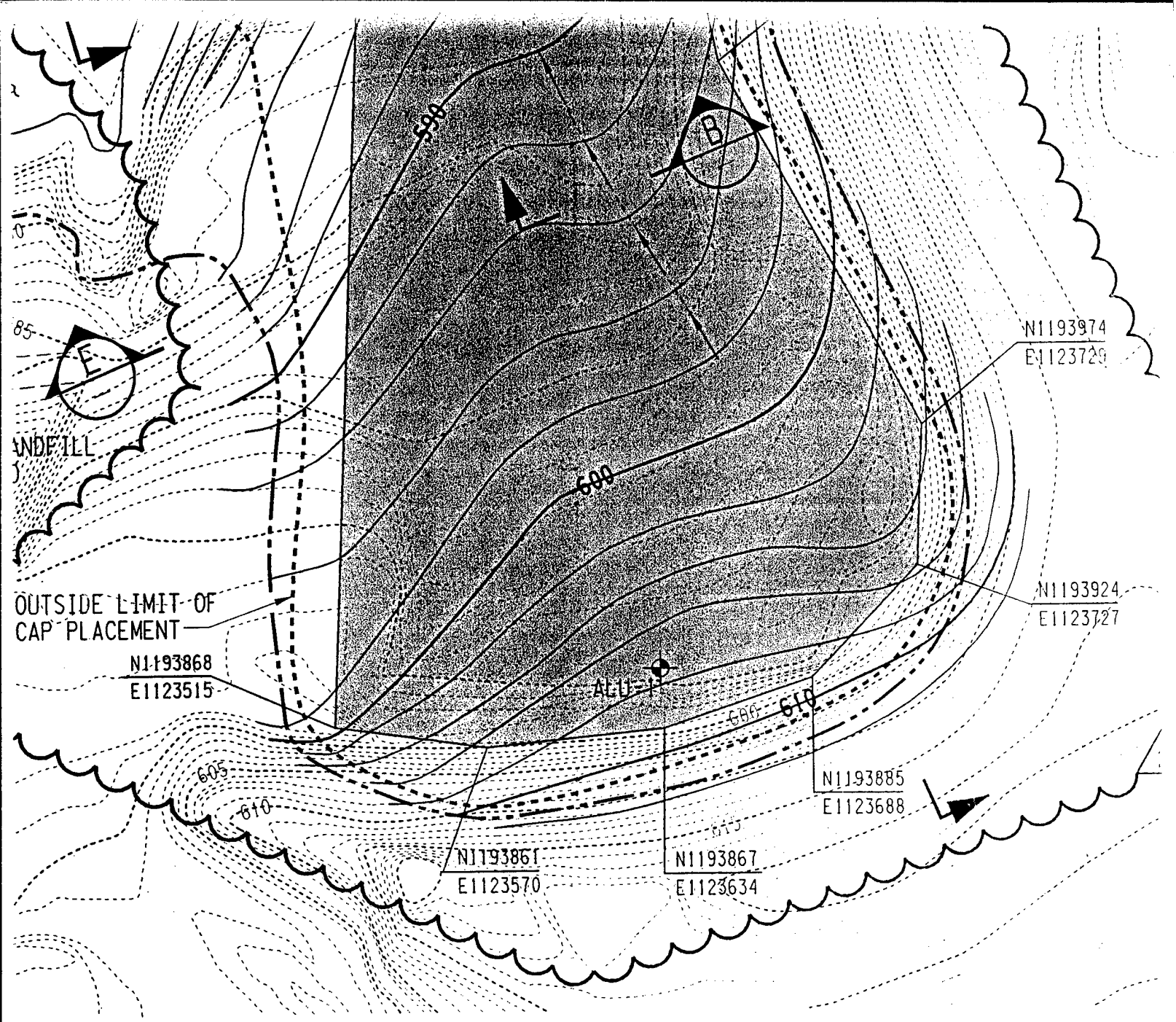
8. USE NORTH AMERICAN GREEN S75, OR EQUIVALENT, TEMPORARY EROSION CONTROL MAT BETWEEN ELEVATIONS 598 AND 582 FT MSL. BELOW 582



ASBESTOS L

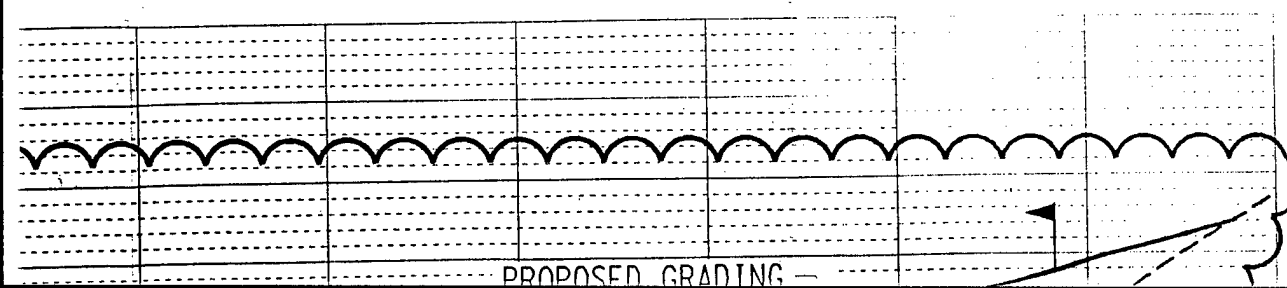
1"=50'

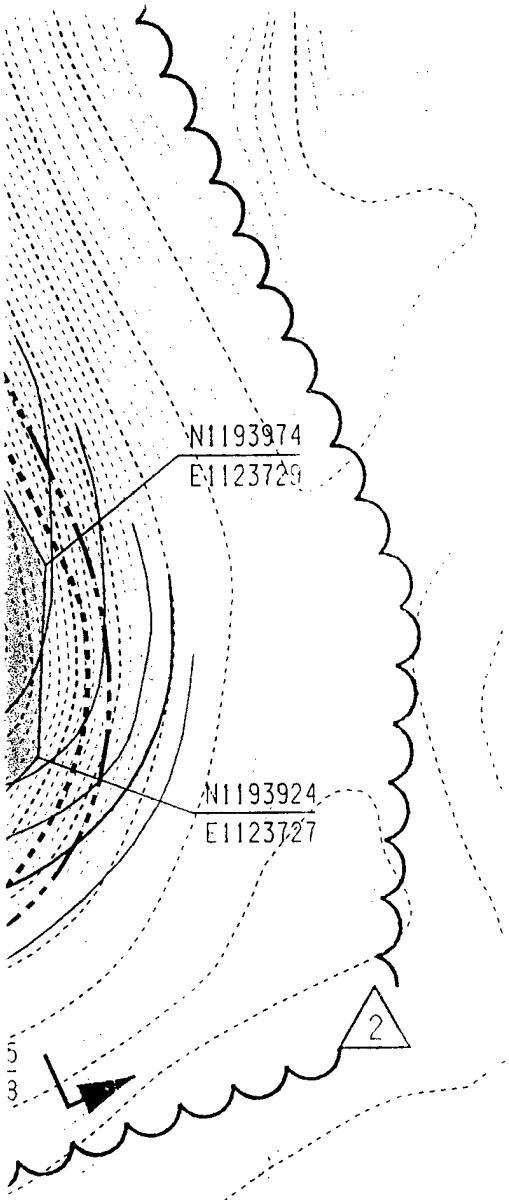




SBESTOS LANDFILL GRADING PLAN

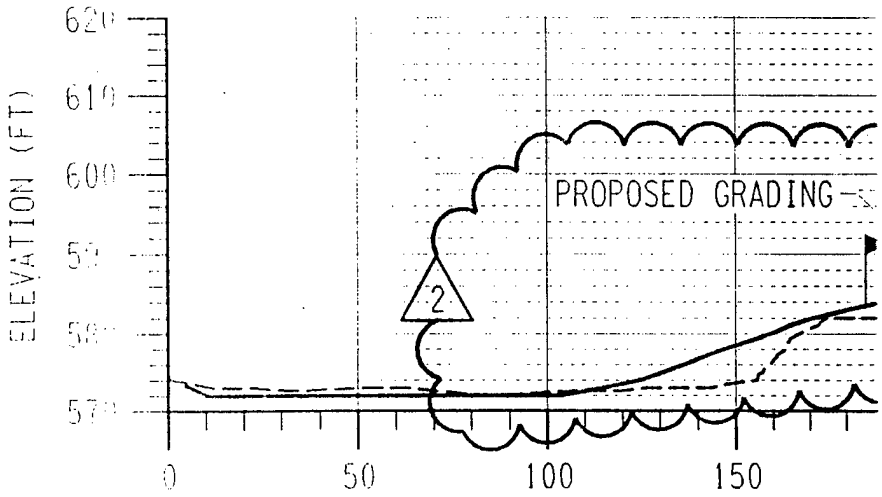
=50'





SECTION

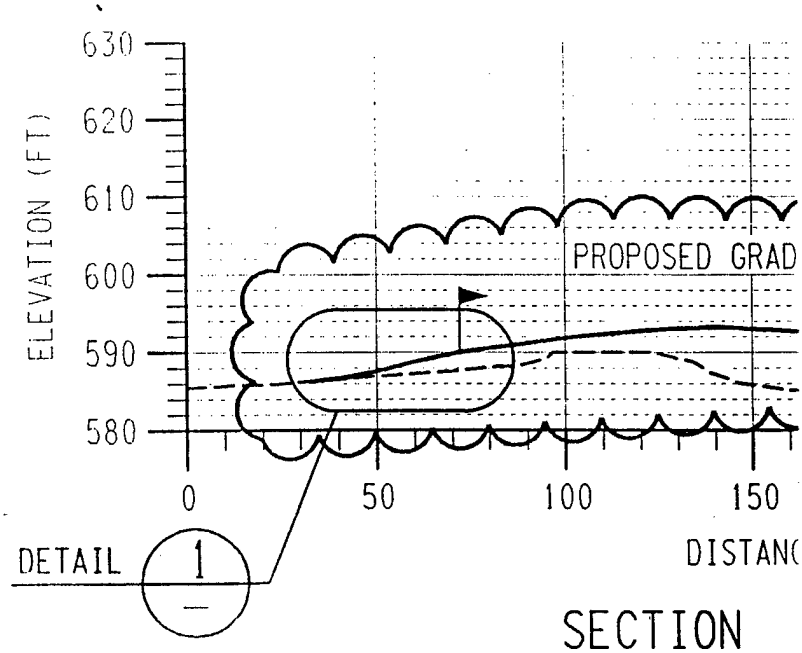
HORZ: 1"=5(
VERT: 1"=2!



DISTANC

SECTION

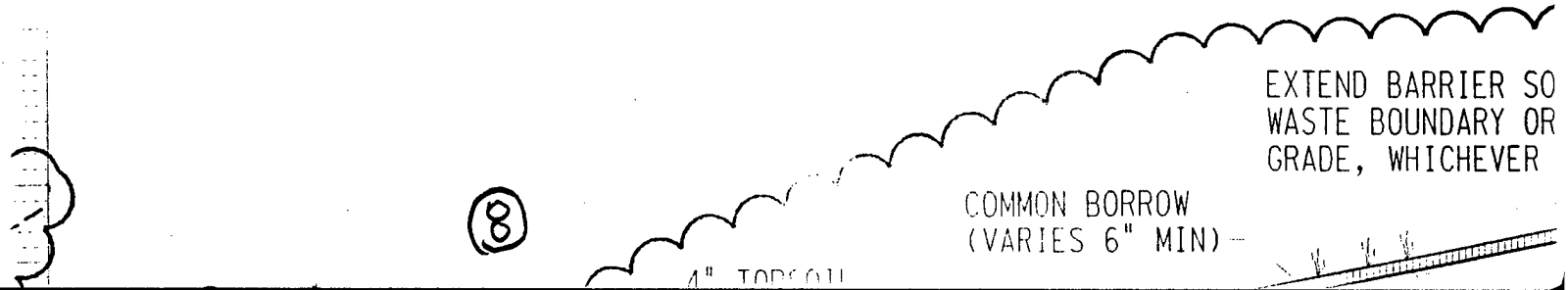
HORZ: 1"=50'
VERT: 1"=25'



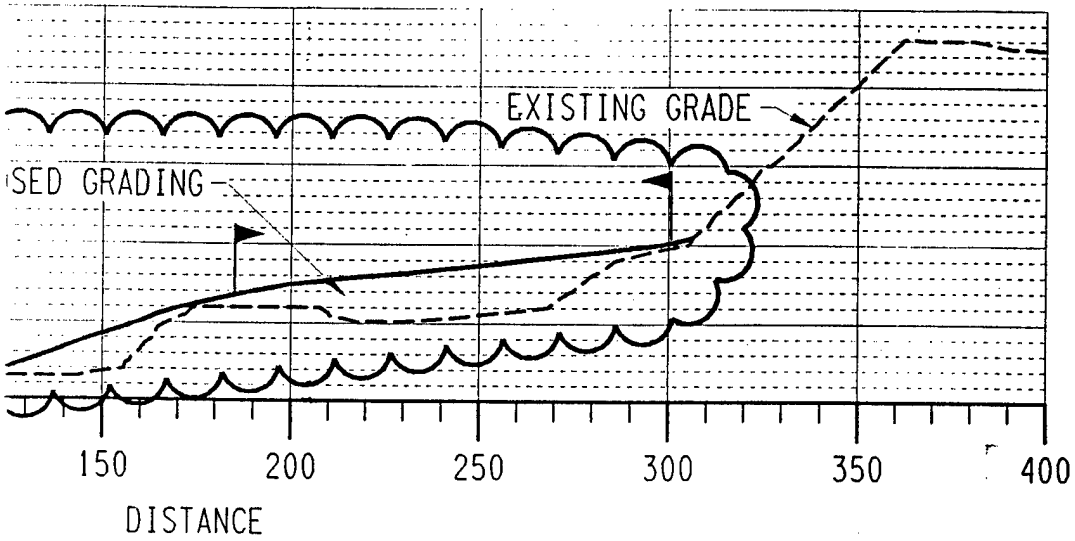
DISTANC

SECTION

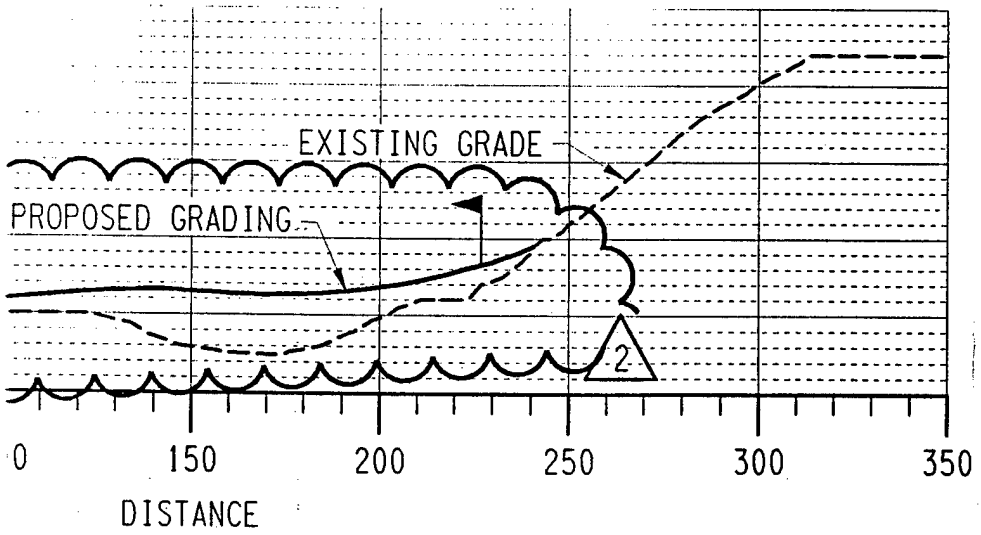
HORZ: 1"=50'
VERT: 1"=25'



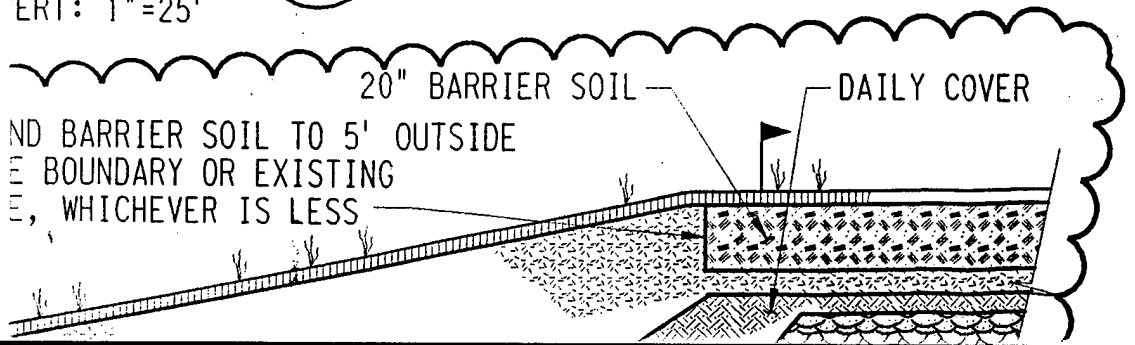
SECTION C
HORZ: 1"=50'
VERT: 1"=25'



SECTION D
HORZ: 1"=50'
VERT: 1"=25'

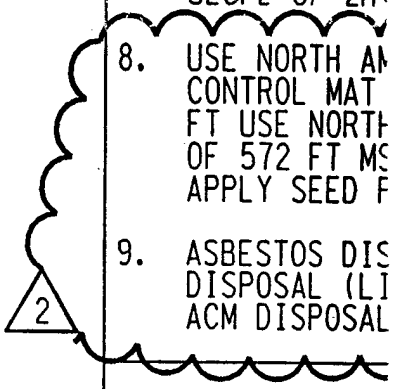


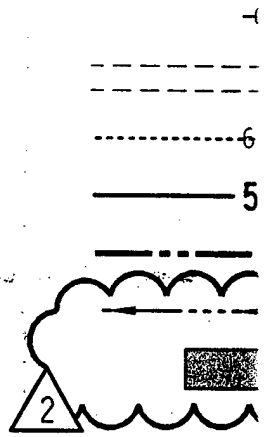
SECTION E
ORZ: 1"=50'
ERT: 1"=25'



9

4. ALL WORK SHA
22784-051-SC
5. SLOPE OF DRA
6. BARRIER SOIL
APPROPRIATE
TOP SOIL.
7. THE EXISTING
CAP SHALL BE
SLOPE OF 2H:
8. USE NORTH AM
CONTROL MAT
FT USE NORTH
OF 572 FT MS
APPLY SEED F
9. ASBESTOS DIS
DISPOSAL (LI
ACM DISPOSAL





NO.	DATE	
2		ASB AND
1	7/28/99	REVI
0	2/12/99	

SCALE NOTED

BECHTE

4. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH SUBCONTRACT 22784-051-SC-121.

5. SLOPE OF DRAINAGE SWALE SHALL BE 2% TO 8% ABOVE ELEVATION 580.

6. BARRIER SOIL SHALL BE LOOSENED (USING A DISC OR OTHER APPROPRIATE METHOD) TO A DEPTH OF 2" PRIOR TO PLACEMENT OF TOP SOIL.

7. THE EXISTING GRADE EXTENDING BEYOND THE LIMITS OF THE FINAL CAP SHALL BE RE-GRADED WHERE NECESSARY TO ASSURE A MAXIMUM SLOPE OF 2H:1V.

8. USE NORTH AMERICAN GREEN S75, OR EQUIVALENT, TEMPORARY EROSION CONTROL MAT BETWEEN ELEVATIONS 598 AND 582 FT MSL. BELOW 582 FT USE NORTH AMERICAN GREEN P300, OR EQUIVALENT, TO ELEVATION OF 572 FT MSL. INSTALL PER MANUFACTURERS RECOMMENDATIONS. APPLY SEED PRIOR TO INSTALLING MATS.

9. ASBESTOS DISPOSAL LIMITS REPRESENT PRE 1998 AIR FORCE ACM DISPOSAL (LIMITS PROVIDED BY AIR FORCE) AND 1998 THROUGH 1999 ACM DISPOSAL BY BEI.

2

LEGEND

ASBESTOS DISPOSAL LIMIT

MONITORING WELL

DIRT ROAD

610 EXISTING CONTOUR

590 PROPOSED CONTOUR

APPROXIMATE LIMITS OF CONSTRUCTION

DRAINAGE SWALE CENTERLINE

LIMITS OF ACM DISPOSAL (SEE NOTE 9)

2

0 50 100 150

1"=50'

NO.	DATE	REVISIONS	BY	CHKR	DESIGN SUPV	ENGR	PROJ ENGR	MICRO FLMD
2		ASBESTOS DISPOSAL BOUNDARY AND OTHER REVISIONS AS NOTED						
1	7/28/99	REVISED AND REISSUED FOR USE	JEM	ILG	WKB	WKB	WKB	
0	2/12/99	ISSUED FOR USE	ILG	JWD	CAD	CAD	WKB	

SCALE NOTED

22784 007 001D0C0 0\22784\007\001D002.DGN 25-NOV-1999

BECHTEL ENVIRONMENTAL INC.

OAK RIDGE, TENNESSEE

LORING AIR FORCE BASE

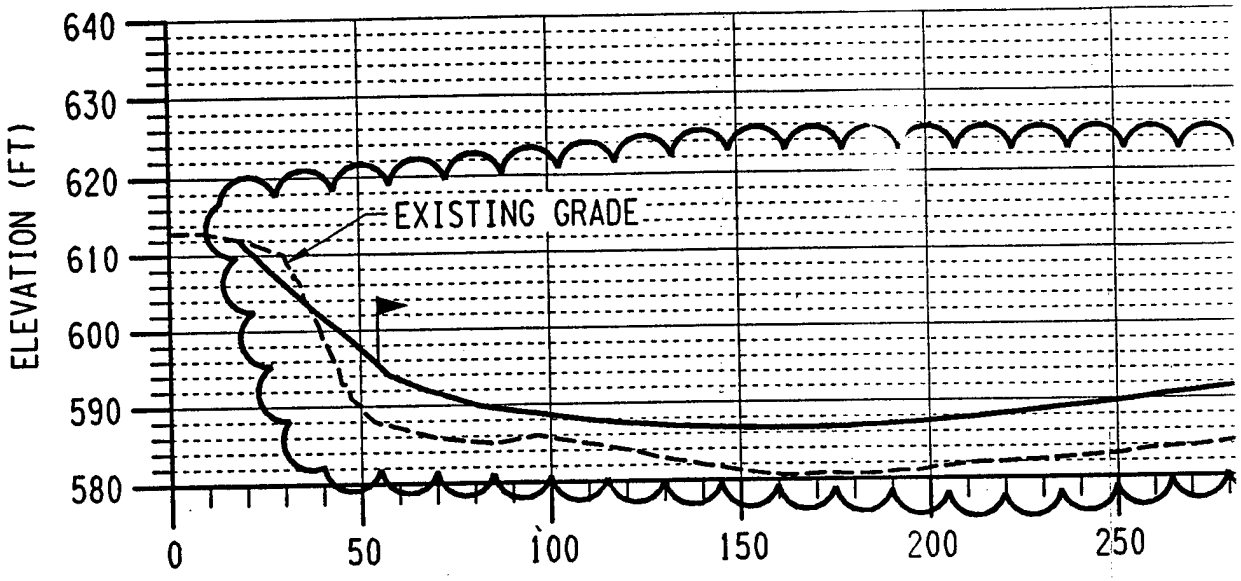
C

B

(10)

ASBESTOS L

1"=50'



DIST

SECTION

HORZ: 1"=5
VERT: 1"=2

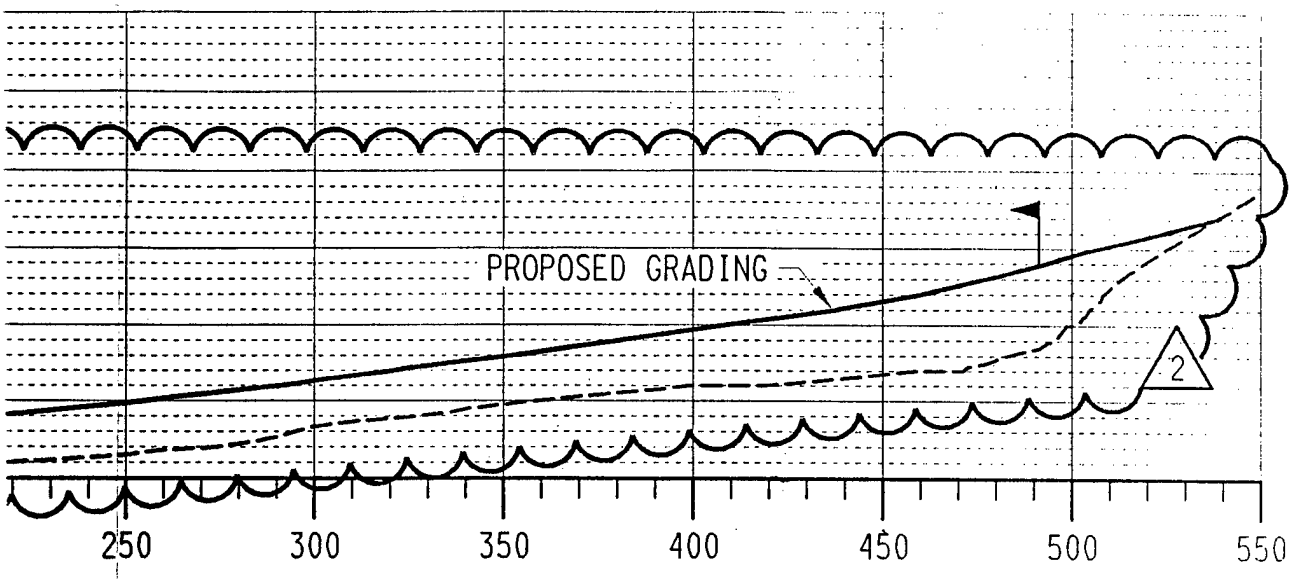
A

8

7

ASBESTOS LANDFILL GRADING PLAN

"=50'

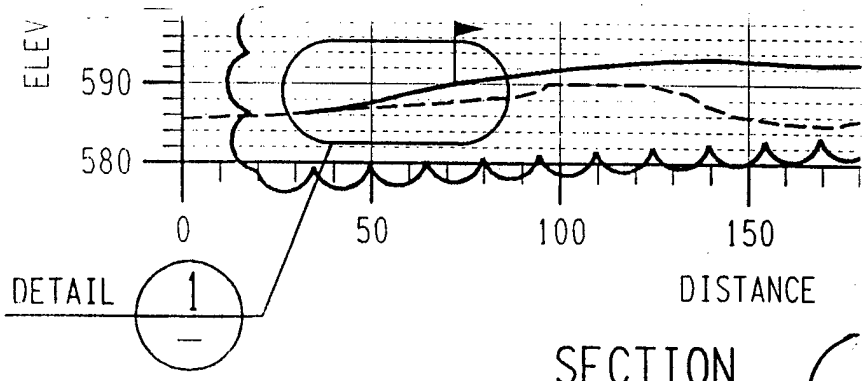


SECTION A

HORZ: 1"=50'
VERT: 1"=25'

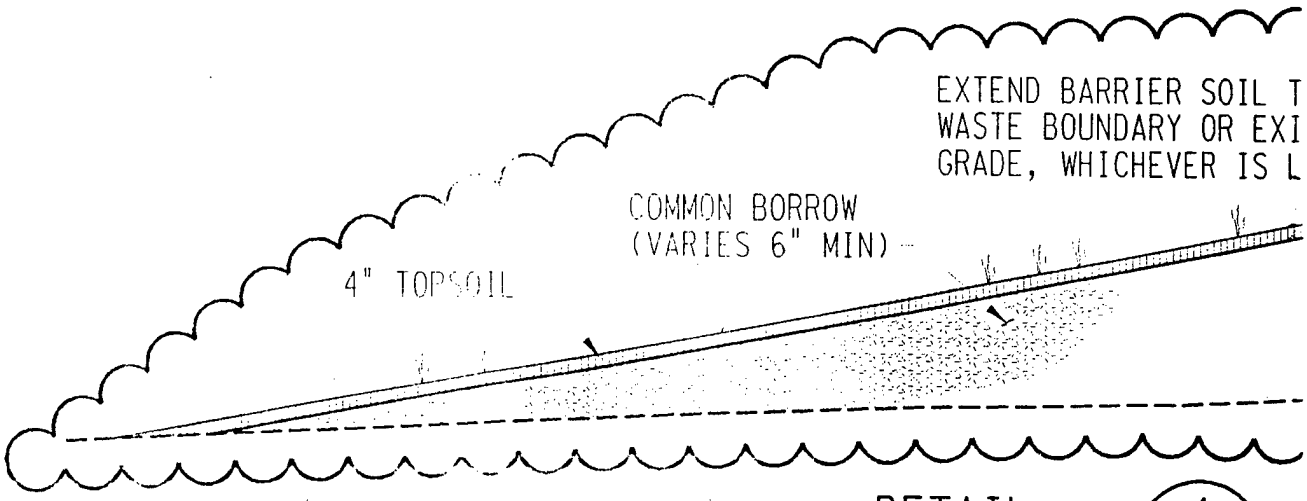
6 5

12a



SECTION

HORZ: 1"=50'
VERT: 1"=25'



DETAIL 1

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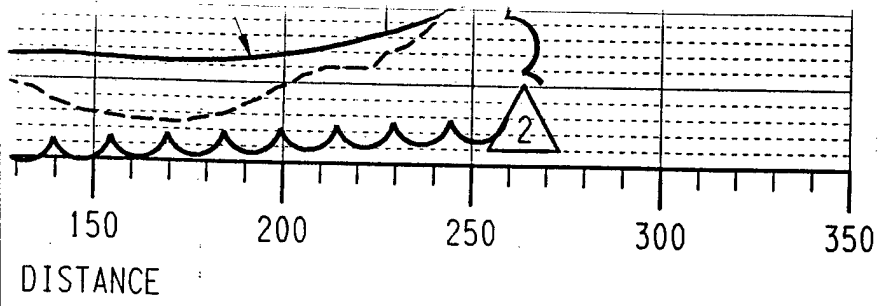
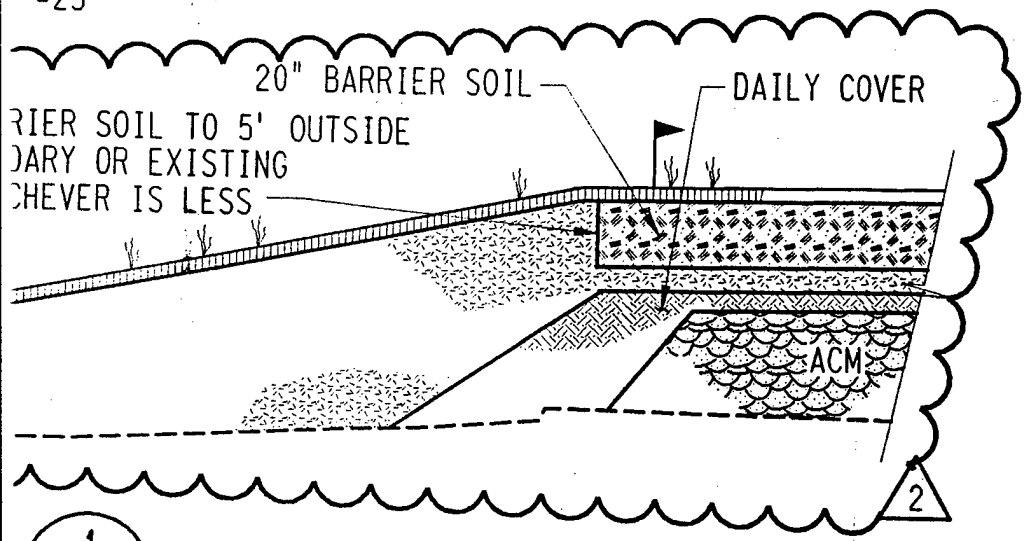
5 4



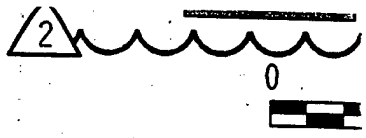
[ON E
"=50'
"=25'



1

WILLIAM K. BARRY, P.E.
PROJECT ENGINEER
MAINE P.E. #8244
EXPIRES DECEMBER 31, 1999

SEAL



NO.	DATE	
2		ASBESTOS AND OTHER
1	7/28/99	REVISED AN
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SCALE NOTED

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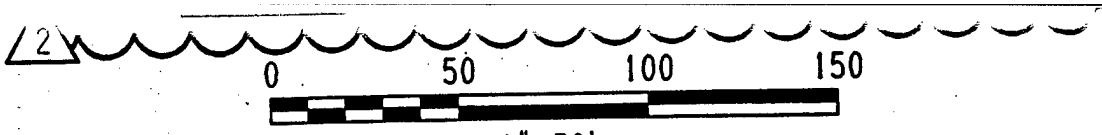

NO.	DATE	REVISIONS	BY	CHKR	DESIGN SUPV	ENGR	PROJ ENGR	MICRO FLMD
2		ASBESTOS DISPOSAL BOUNDARY AND OTHER REVISIONS AS NOTED						
1	7/28/99	REVISED AND REISSUED FOR USE	JEM	ILG	WKB	WKB	WKB	
0	2/12/99	ISSUED FOR USE	ILG	JWD	CAD	CAD	WKB	

SCALE NOTED

22784 007 007D002.DGN 26 NOV 1999

BECHTEL ENVIRONMENTAL INC.

OAK RIDGE, TENNESSEE

LORING AIR FORCE BASE
LIMESTONE, MAINE

ASBESTOS LANDFILL FINAL CAP
GRADING PLAN AND SECTIONS

JOB NO.	DRAWING NO.	REV
22784	007-DD-002	2

REV 1/97

22x34

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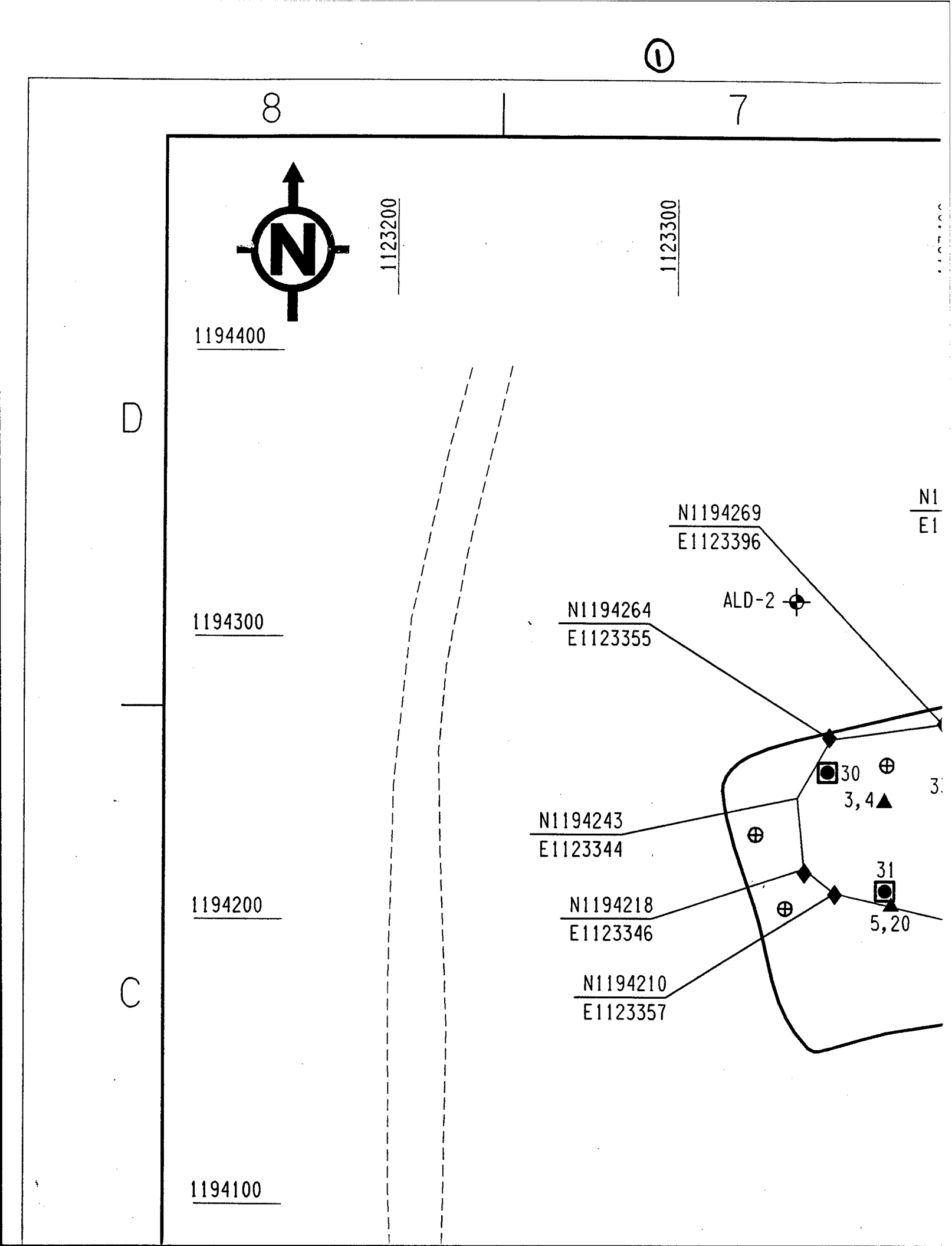
I:\22784\007\007d002.dgn Nov. 23, 1999 09:50:40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7
N
1123200
1123300
1194400
D
1194300
1194200
C
1194100
N1194269
E1123396
ALD-2
N1194264
E1123355
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3,4
N1194243
E1123344
31
5,20
N1194218
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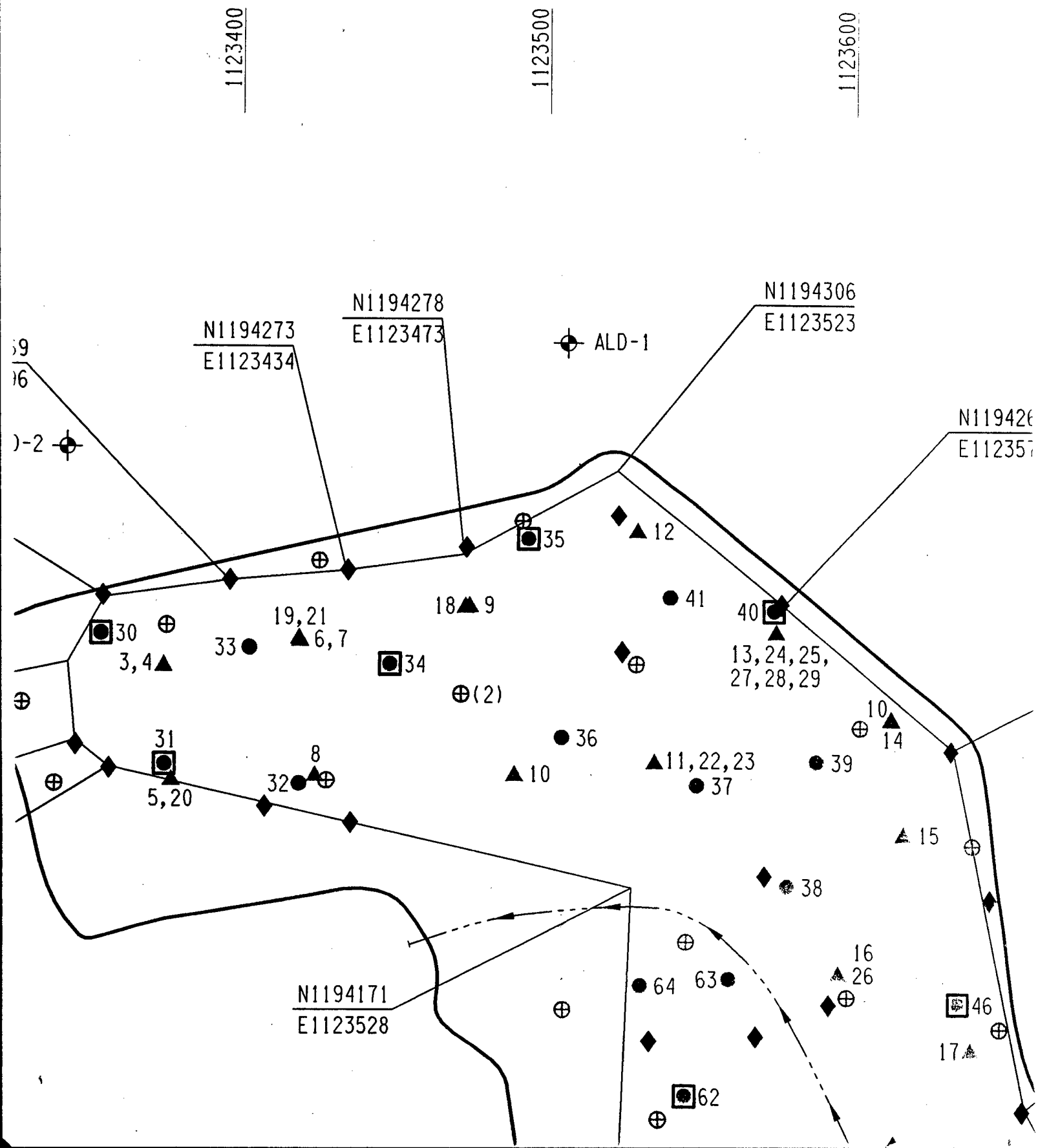
E1123357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1123500
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ALD-1
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E1123523
N119426
E112357
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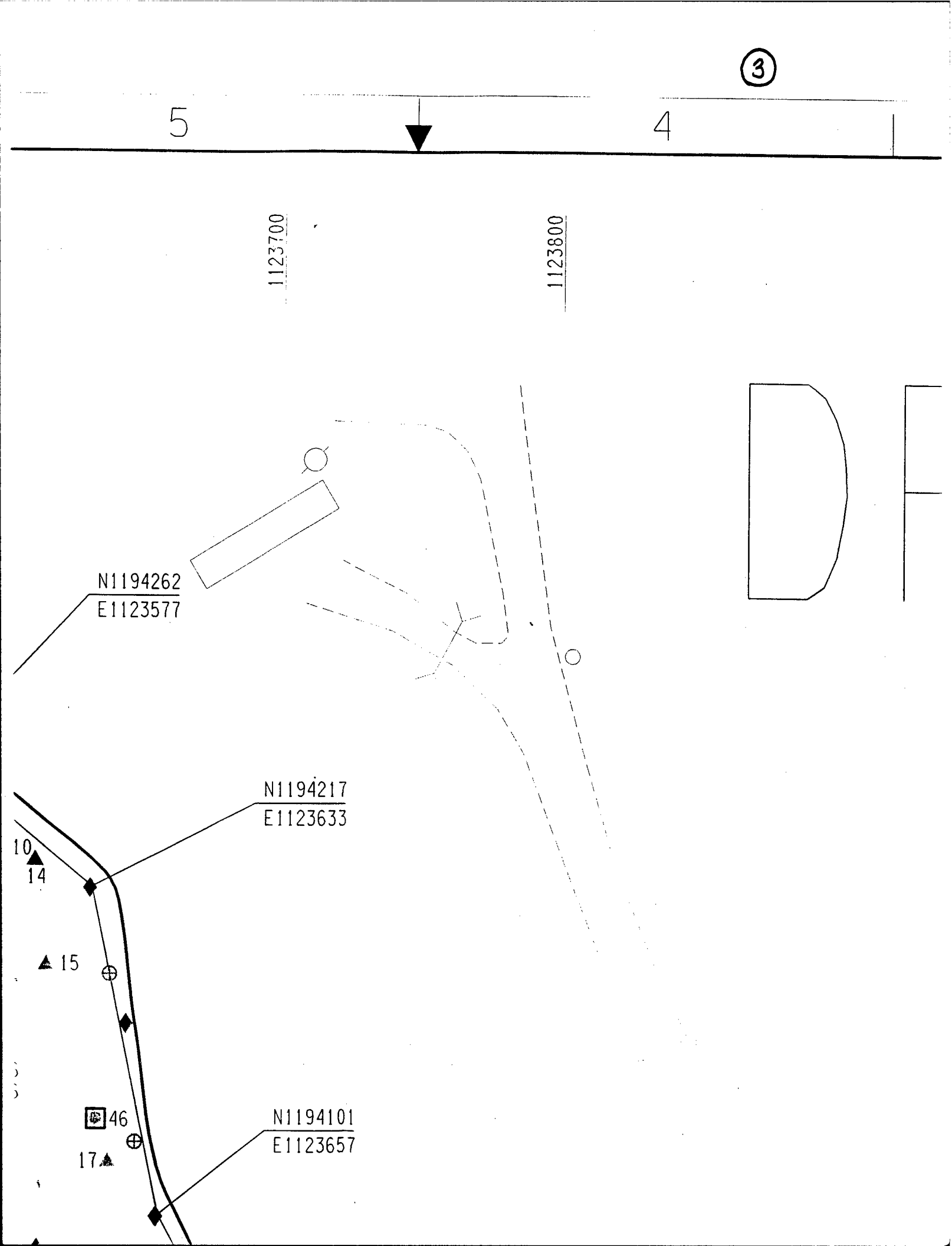
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(4)

3

2

ASBESTC
LANDFIL

DRAFT

1. TOTAL AR

2. 35 LIFT
LIFT 1 C

3. 14 LIFT
THICKNES
IN THESE

4. 22 DENSI
OF BARRI

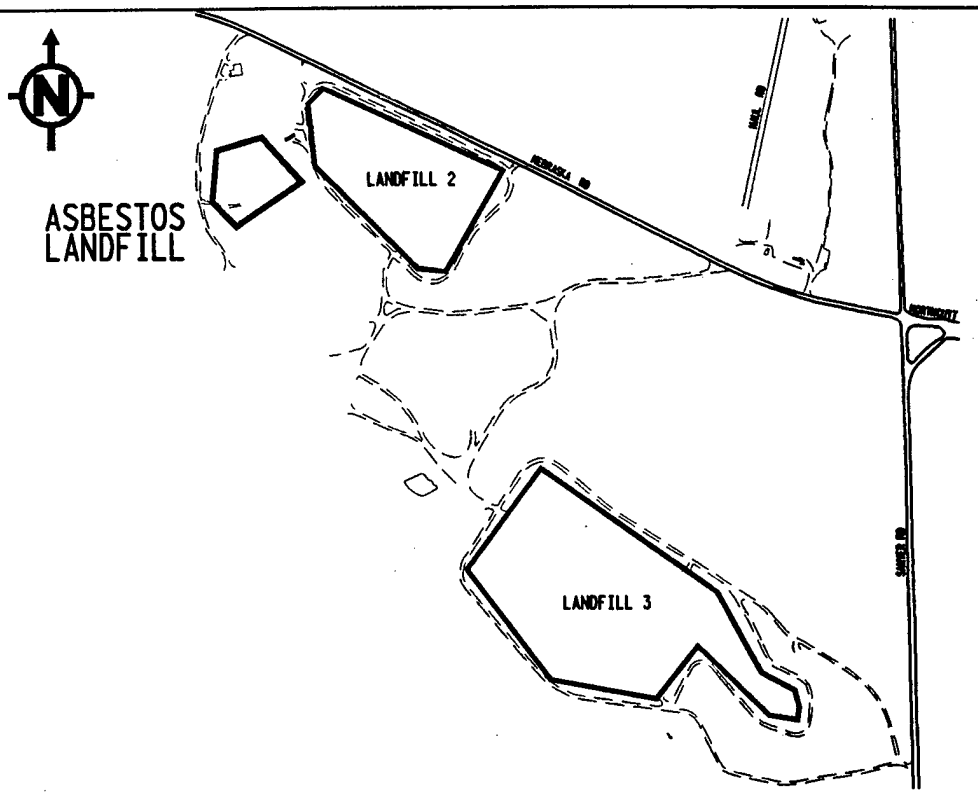
5. 27 DENSI
LIFT OF

6. 21 LIFT
TOPSOIL

5

2 | 1

KEY PLAN (NTS)



NOTES

1. TOTAL AREA IS 2.29 ACRES. (OUTSIDE LIMITS OF CAP PLACEMENT)
2. 35 LIFT THICKNESS MEASUREMENTS PERFORMED & LOCATED FOR LIFT 1 OF BARRIER SOIL PLACEMENT. (15.3 PER ACRE)
3. 14 LIFT INTERFACE TESTS WERE PERFORMED. BARRIER SOIL LIFT THICKNESS MEASUREMENTS (LIFT 2) WERE PERFORMED & LOCATED IN THESE EXCAVATIONS. (6.1 PER ACRE)
4. 22 DENSITY TESTS WERE PERFORMED & LOCATED ON THE FIRST LIFT OF BARRIER SOIL PLACED. (9.6 PER ACRE)
5. 27 DENSITY TESTS WERE PERFORMED & LOCATED ON THE SECOND LIFT OF BARRIER SOIL PLACED. (11.8 PER ACRE)
6. 21 LIFT THICKNESS MEASUREMENTS PERFORMED & LOCATED FOR TOPSOIL PLACED. (9.2 PER ACRE)

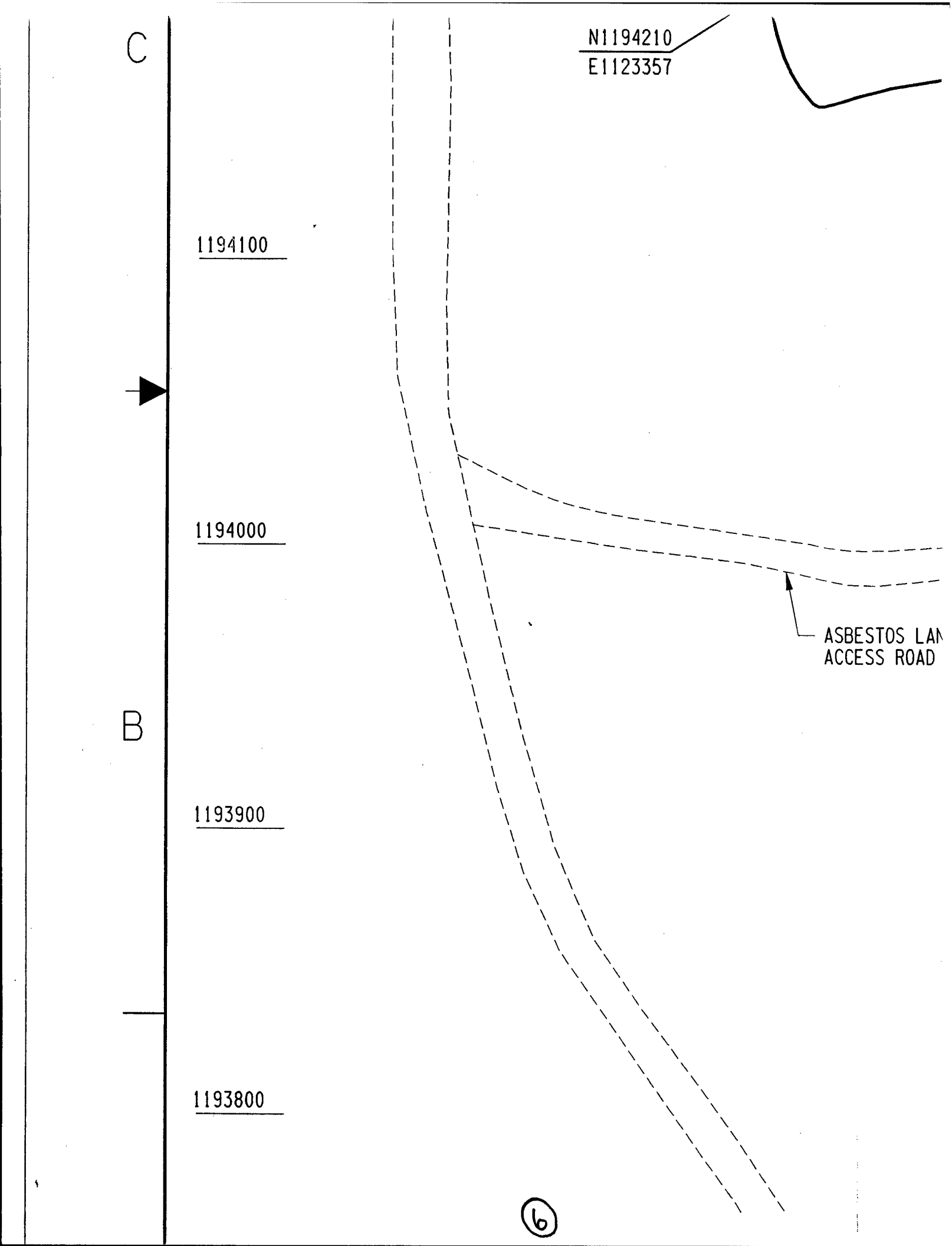
LEGEND

- - - - - - - - - - - - - DIRT ROAD

DRAINAGE SWALE CENTERLINE

D

C


C
N1194210
E1123357
1194100
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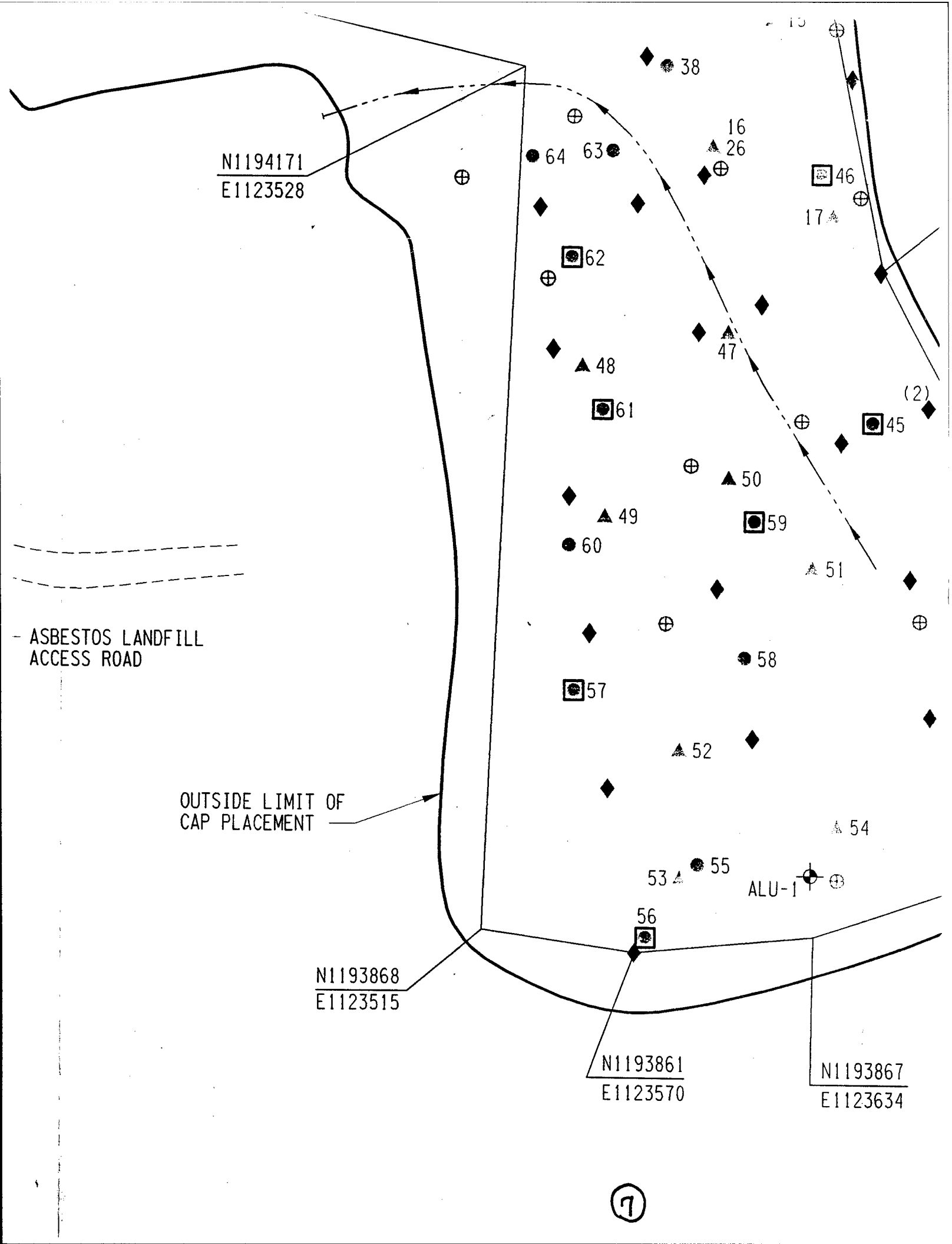
ASBESTOS LAN
ACCESS ROAD
B
1193900
1193800
6


N1194171
E1123528
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48
(2)
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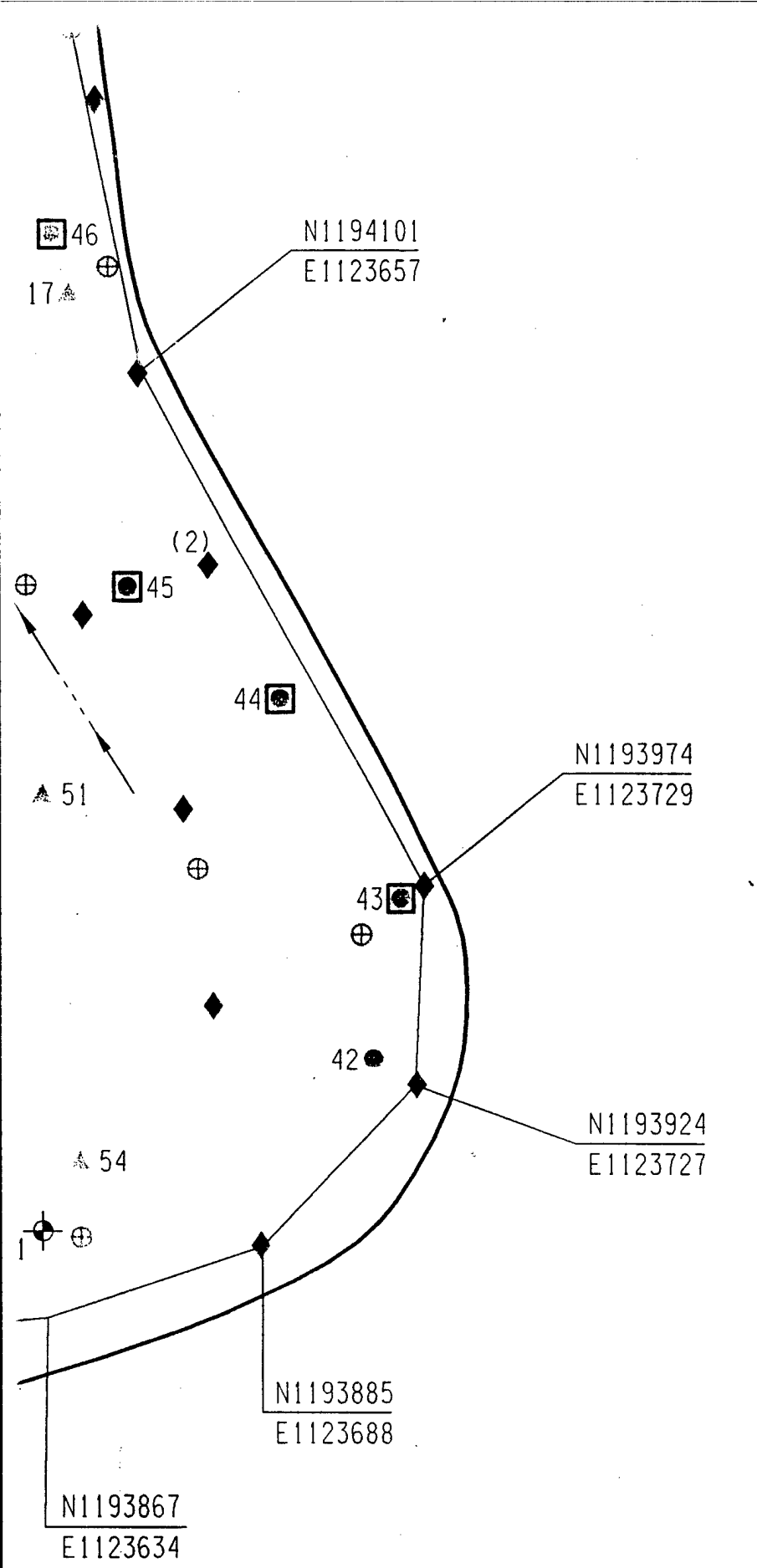
49
59
60
51
ASBESTOS LANDFILL
ACCESS ROAD
58
57
52
OUTSIDE LIMIT OF
CAP PLACEMENT
54
53
55
ALU-1
56
N1193868
E1123515
N1193861
E1123570
N1193867
E1123634


46
17
N1194101
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N1193974
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43
42
N1193924
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1
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E1123634

OF BARRIER

5. 27 DENSITY
LIFT OF BA

6. 21 LIFT TH
TOPSOIL PL

ALU-1 ⊕

◆

□

⊕

50 ▲

58 ●

NO.	DATE	
0		

SCALE 1" = 40'

BECHTEL

OF BARRIER SOIL PLACED. (9.6 PER ACRE)

5. 27 DENSITY TESTS WERE PERFORMED & LOCATED ON THE SECOND LIFT OF BARRIER SOIL PLACED. (11.8 PER ACRE)

6. 21 LIFT THICKNESS MEASUREMENTS PERFORMED & LOCATED FOR TOPSOIL PLACED. (9.2 PER ACRE)

LEGEND

DIRT ROAD

DRAINAGE SWALE CENTERLINE

LIMITS OF ACM DISPOSAL

ALU-1 ⊕ BENCHMARK

◆ LIFT THICKNESS CONFIRMATION, LIFT 1

□ LIFT THICKNESS CONFIRMATION, LIFT 2, AND LOCATION OF INTERFACE BONDING TEST

⊕ LIFT THICKNESS CONFIRMATION, TOPSOIL

50 ▲ DENSITY TEST, LIFT 1

58 ● DENSITY TEST, LIFT 2

1"=40'

NO.	DATE	REVISIONS	BY	CHKR	DESIGN SUPV	ENGR	PROJ ENGR	MICRO FLMD
0		AS-BUILT						

SCALE 1"=40'

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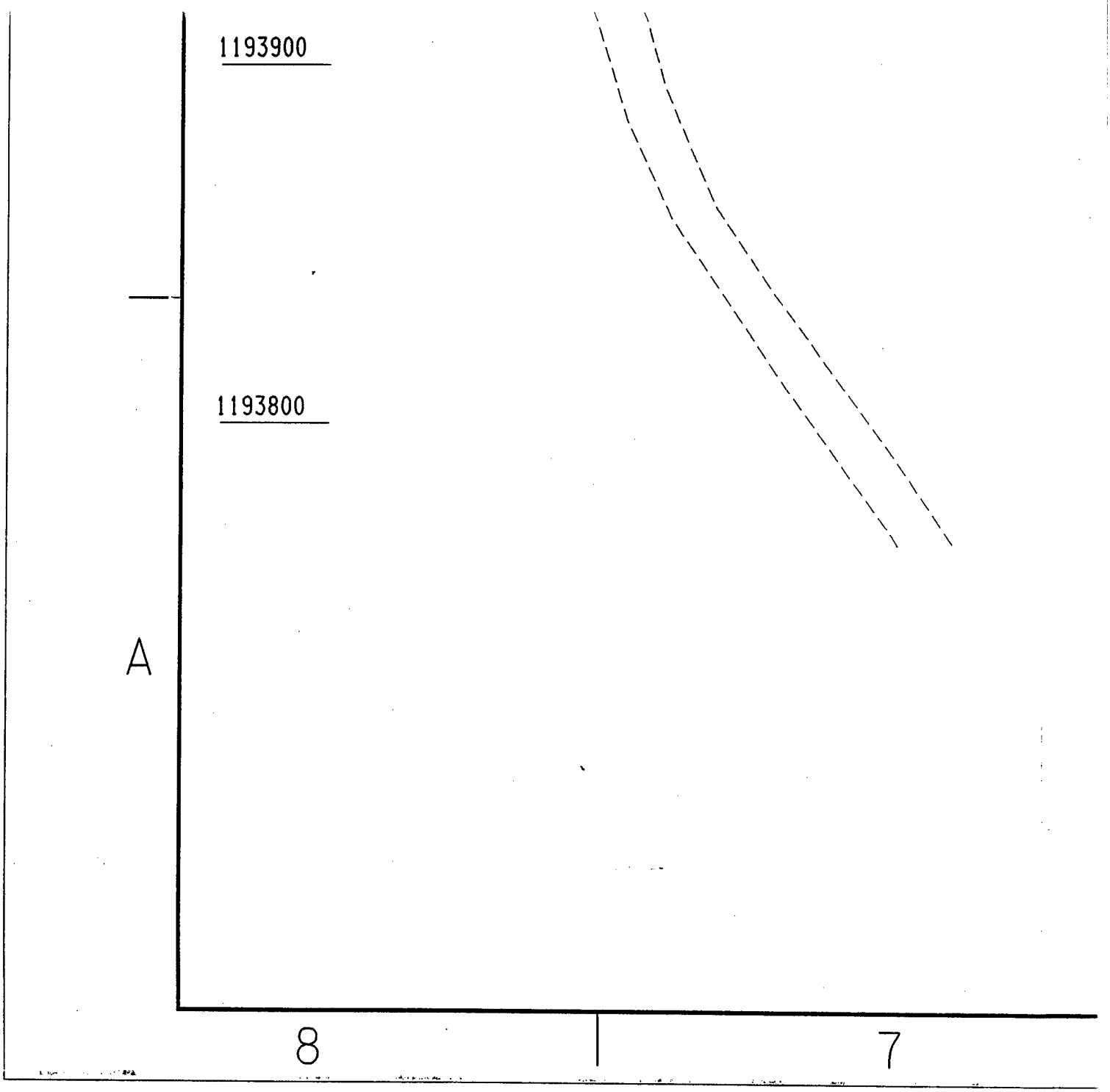
23 NOV 1999

BECHTEL ENVIRONMENTAL INC.

OAK RIDGE, TENNESSEE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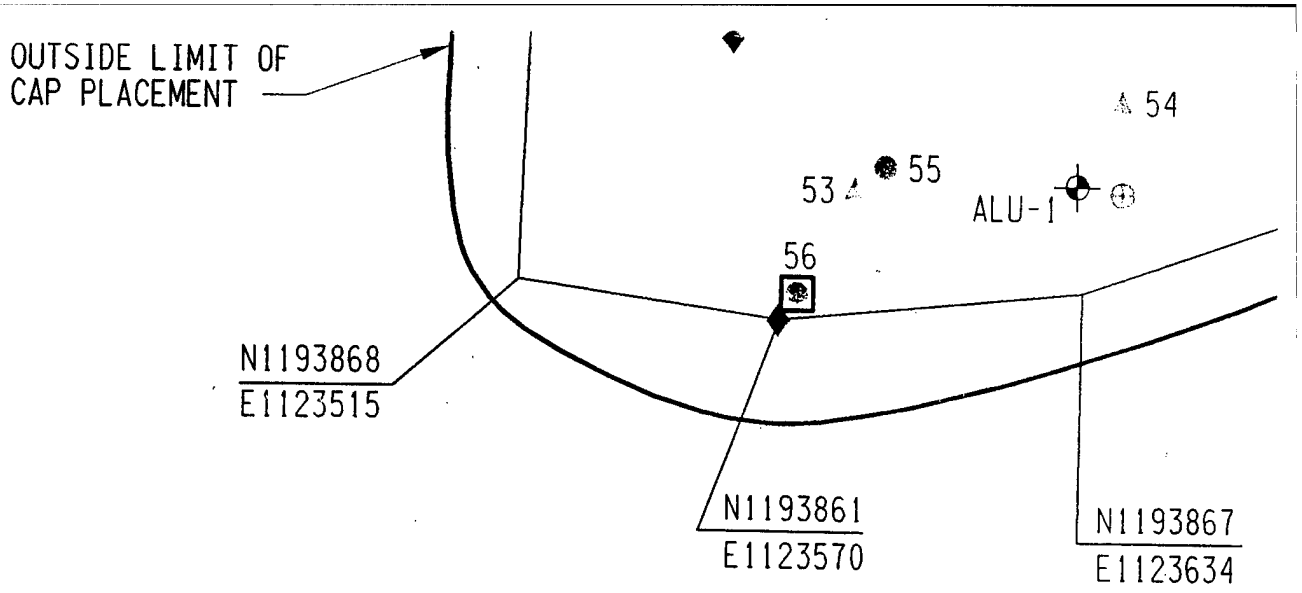
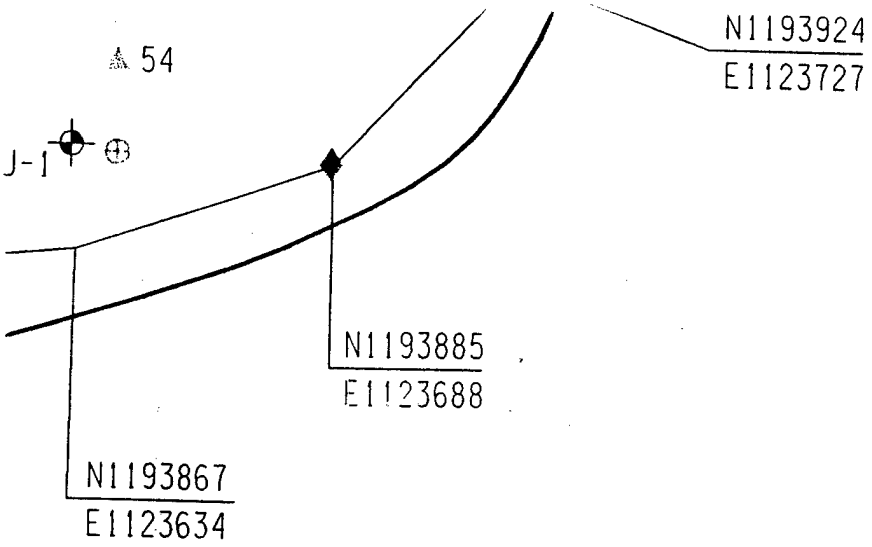


SITE PLAN - ASBESTOS LANDFILL

1"=40'

6 5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J-1
N1193924
E1123727
N1193885
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NO.	DATE
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SCALE 1"=40'

BECHTEL

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JO

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3 2

(14)

0 40 80 120

1"=40'

NO.	DATE	REVISIONS	BY	CHKR	DESIGN SUPV	ENGR	PROJ ENGR	MICRO FLMD
0		AS-BUILT						

SCALE 1"=40'

O:\22784\007\ABLFSITE.DGN
23 NOV 1999

BECHTEL ENVIRONMENTAL INC.

OAK RIDGE, TENNESSEE

LORING AIR FORCE BASE
LIMESTONE, MAINE

ASBESTOS LANDFILL FINAL CAP
BARRIER SOIL & TOPSOIL LIFT THICKNESS, DENSITY, & INTERFACE BONDING TEST LOCATIONS

JOB NO.	DRAWING NO.	REV
22784	007-DD-003	0

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REV 1/97

22x34

2 1

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